PERSIAN GULF WAR VETERANS ISSUES

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BEFORE THE

SUBCOMMITTEE ON BENEFITS

OF THE

COMMITTEE ON VETERANS' AFFAIRS

HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

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PERSIAN GULF WAR VETERANS ISSUES

TUESDAY, OCTOBER 26, 1999

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON BENEFITS,
COMMITTEE ON VETERANS' AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:06 a.m., in room 334, Cannon House Office Building, Hon. Jack Quinn (chairman of the subcommittee) presiding.

Members present: Representatives Quinn, Hayworth, LaHood, Filner, and Reyes.

Also present: Representative Rodriguez.

OPENING STATEMENT OF CHAIRMAN QUINN

Mr. QUINN. Good morning. We would like to begin our hearing. We have just been given word from the cloakroom that we do not expect a vote through one-minutes and opening remarks. So, we will more than likely have enough time to begin and conclude the hearing without interruptions, which is good news.

Today's hearing on the claims adjudication issues facing some Persian Gulf War veterans is the committee's nineteenth hearing on this topic and certainly not the last. I look forward, along with Bob Filner and others, to learning where we are today in helping those veterans who view their illness as a result of their service in the Gulf.

While we expect some witnesses to make mention of the recent Rand study, I would like to remind everyone that many unanswered questions still exist. Today's hearing isn't necessarily an analysis of the study results. The Subcommittee on Oversight and Investigations, along with the Subcommittee on Health, will be holding a hearing on the Rand report in mid-November.

I also want to apologize on behalf of the subcommittee, particularly to the Department of Veterans Affairs, for not being able to give our witnesses the customary 3-week notice before the hearing. It is challenging enough to coordinate your testimony and receive necessary clearances, and we are usually the first ones to remind you when it is a little late, and we turned around and asked you to have it here more quickly than we usually do. So, I want to apologize for all of us. We appreciate your efforts to get it here, particularly our first panel.

We are interested, of course, in how the VA is handling Persian Gulf claims in light of the whole decentralization of the adjudication process. Criticisms in the past have been a lack of consistency in claims decisions, inadequate employee training, relatively poor outreach and less than uniform development of evidence. Today, we want to seek some assurance that the VA has a handle on all of these claims.

We have today three panels of witnesses. I think I, for one, do not intend today's hearing to fuel conspiracy theories, and we do not want to do to the whole hearing process any kind of disservice. We are here simply to inform the subcommittee of where we are on the issue and where we need to go.

Before I yield to Bob Filner and other members for opening remarks, I want to thank Bob Filner. He and I have been together on the subcommittee for some time and both of us have a keen interest in the whole Persian Gulf issue; and, Bob, I appreciate your efforts to stay after me as the Chair. We worked together on all this and I think that we did it in the proper way, and I think we will, also, as you point out, have a time maybe later this year, in April—we will talk about that this morning—to have a follow-up hearing. But let me yield to Bob Filner from California for opening remarks. Bob.

OPENING STATEMENT OF HON. BOB FILNER

Mr. FILNER. Thank you, Mr. Chairman, and I thank you for holding this hearing. Serious questions have arisen about the situation and I think we need to get the facts on the table, and we welcome Congressman Rodriguez here to sit in with our subcommittee and to take an active role with us. I have, as many of us in the Congress, been very frustrated, disappointed, at times angry about the plight of the Persian Gulf War veterans. It is now almost a decade since that war, and yet we have no answer to what occurred in terms of making our men and women ill or, really, a good treatment protocol for something that we do not know the cause of.

It is a fact that tens of thousands of our veterans are ill, and yet the response of our government, especially from the Defense Department and partially from the VA, has been one of almost disinterest. For years, there was a denial that anybody was sick. Then there was a grudging admission that people may be sick, but it is probably from the stress of war time conditions and returning to civilian life. So, we go through 5 years or so without ever having any recognition that something is seriously wrong here.

Meanwhile, people who had legitimately undertaken medical research on this problem were systematically dismissed. Research was not funded. Conclusions were ridiculed. No help was given by either DOD or VA to any of the medical research that was done. The tragedy at Khanusiyah was publicly divulged. At first, DOD said, well, nobody was exposed to the chemicals that were blown up there; then maybe a few hundred people; then maybe a few thousand; and now, you know, more than 100,000. The pattern of denial and ridicule and refusal to face the facts continues to go on. Especially when we had the possibility of troops returning to the Gulf recently, it seemed to me we would have had to have an intensified government effort to figure out what occurred before we actually sent our men and women over there again, or anywhere in this world, for that matter.

Then, when we discover things like the effects of depleted uranium, the effects of PB, every time something is brought up by a legitimate source, our government, whether it is DOD or VA, seems to stonewall it and not allow for a clear understanding of the issues. It seems to me that anybody legitimate ought to be encouraged, rather than systematically ridiculed, for their efforts to uncover the truth.

When we get to the benefits side, as we will today, it is almost adding insult to injury. This Congress passed a law which we thought said that because we did not know the cause, it would presume that for an undiagnosed illness of the suffering that these veterans were having, they would be provided benefits. That was the law. It seems to me that clearly if you look at the hearing record, at the statements that this congressman and others have made it was clear what we had in mind.

Yet the VA comes back to us—this is the VA, the Department of Veterans Affairs; it's supposed to be for veterans and says, well, our counsel says your law was very narrowly defined and if somebody has a label or a diagnosis, they are not going to get benefits, even though everybody would understand that this is an illness that came out of the Persian Gulf. I do not understand. I do not understand the narrow definition, and I think our Chairman of the full committee, Mr. Stump, has been very concerned about this. He wrote a strong letter to the VA, which I would like to introduce into the record, his letter of June 3.

Mr. QUINN. Without objection, so ordered.

(The letter appears on p. 78.)

Mr. FILNER. He, I think, laid it out extremely clearly, what the committee had in mind and what, apparently, the response was. Joe, I am going to ask you this when you testify, so you can be prepared—even if your counsel was—and is he here today, or she, whoever it may be, because I would like to talk to them about it—even if they made that conclusion, why doesn't the VA come back to us and say, "You wrote the law that our counsel says we cannot follow, change the law so we can do what you want it to." I do not know that you ever did that. I do not understand why you did not do it, and I do not understand the bureaucratic and legalistic interpretation of this. If you have to go by your judiciary or fiduciary responsibilities, that is fine. But find us a way to do what we all want to do, which is to give medical treatment to these veterans and benefits because of the suffering they were undergoing.

What you are doing on the benefits side is repeating this whole syndrome of denial, of ridicule, of refusal to fact the facts, of refusal to take responsibility for what occurred. I find that very distressing. I know this congressman, and I think the members of this committee, are going to keep on this subject until the truth is known and until our veterans get both an adequate explanation for what occurred and adequate medical treatment and benefits compensation for their illness.

I look forward, Mr. Chairman, to hearing what the VA says. As I said, I interpret the VA as administration *for* veterans. The benefit of the doubt should be *for* veterans, and if there is a problem with the way we wrote legislation, for the counsel or for the Under Secretary, why don't you give us a new bill so we could give the benefits that we wanted to do.

Thank you.

Mr. QUINN. Thank you, Mr. Filner. We welcome, of course, Mr. Rodriguez to the subcommittee today. I understand you will be introducing one of the witnesses later this morning, but I would like to give you the opportunity for any opening statement.

Mr. RODRIGUEZ. Mr. Chairman, just I want to thank you for allowing me to be here and I look forward to making some comments later on. Thank you.

Mr. QUINN. Thank you very much. Good to have you here.

Mr. Reyes, opening statement now?

OPENING STATEMENT OF HON. SILVESTRE REYES

Mr. REYES. Thank you, Mr. Chairman. I also want to thank you for scheduling today's hearing and I want to thank Ranking Member Filner, as well, for his impassioned interest in this very critical issue. I do have a statement for the record that I would like to enter.

Mr. QUINN. Without objection, so ordered.

[The prepared statement of Congressman Reyes appears on p. 101.]

Mr. REYES. In doing so, Mr. Chairman, I just want to associate myself with both of the gentlemen's comments, because time after time after time, we have seen that there is a problem. We need to obviously continue to stay on the Veterans' Administration. I think that there is simply an unwillingness or a reluctance to follow through on some of these issues that have affected our veterans. I hope that you continue to hold these types of hearings, to hold people accountable until this issue is resolved for our veterans. So, I thank you, Mr. Chairman, for holding this hearing.

Mr. QUINN. Thank you, Mr. Reyes. Always helpful input from both of you gentlemen, on the full committee, too. Thanks, Bob. I also want to take a minute now—we will do it at the end, I'm sure—but I want to thank our staffs, Bob, both in our offices and on the committee for putting this together for us on somewhat short order. We appreciate your work in getting together, which we had to do, first of all, and then all the contacts that were made. I know both of us appreciate that.

We are going to bring up our first panel now: Mr. Joseph Thompson, who is the Under Secretary for Benefits at the VBA. Joe, you will be the only speaker, but the rest of the Thompson team is on its way up here to be with you, and we appreciate you bringing the team with you this morning. I am sure there may be some specific questions for everyone else.

I am told we have new timing devices here. So, we will see if they work. Whether or not they do, I have got the old-fashioned timing device on here, Joe, that we are going to use, right here. Let me begin, before you start your testimony, to say thanks and apologize again for the short time here. I suppose someone in my office said that Joe Thompson would have had time to get the testimony ready if he wasn't out taking you on a tour of one of the hospitals and a video program. I suppose I am guilty of that myself.

But, Bob, I want to mention for the record now, too, that I took the opportunity last week to go to the VBA and their recording studio here, where they have the opportunity to talk to their employees out in the field, to talk to them a little bit about what is going on from our view, and at that time mentioned—I probably should have checked with you first—but I mentioned that I was going to see if you wanted to take a run up some day to do the same thing from your perspective. Maybe we will get there together more, I guess, to talk about how it works for the VA employees out there. That was very worthwhile to me, Joe. We will follow up on that later.

Mr. FILNER. I was wondering why I was invited just recently. It was because——

Mr. QUINN. Because we mentioned it. (Laughter.)

We have serious business to discuss today. It really is. I think we are all about the same thing, and that is finding out how we can serve our veterans. Sometime our job is to prod and push, and we are going to do that when it is our job to do that. Yours is to help us and help veterans.

So, why don't I ask you—I know we have written remarks at some point—to keep your oral testimony to about 5 minutes, Joe, and then we will entertain questions.

STATEMENT OF JOSEPH THOMPSON, UNDER SECRETARY FOR BENEFITS, DEPARTMENT OF VETERANS AFFAIRS

Mr. Joseph THOMPSON. Thank you, Mr. Chairman. I would like to introduce the full statement into the record and read a brief extract. If I could, I would like to introduce my fellow panel members: Dr. Fran Murphy, on my left, is the Acting Deputy Under Secretary for Health; Dr. Jack Feussner on the end is the Chief Research and Development Officer for the Veterans Health Administration; to my immediate right is Chuck DeCoste, the head of VBA's Data Management Office; and Bob Epley is the Director of the Compensation and Pension Service; standing in reserve, we have Jack Thompson, the Deputy General Counsel, and he is prepared to answer some of the issues that Congressman Filner raised on what we think the legislation allows us to do.

Mr. Chairman, thank you for the opportunity to testify today on Gulf War veterans issues. I am pleased to be here with you to provide a status report on Gulf War veterans claims and to discuss the efforts VA has made to improve Gulf War programs. I believe the department has made progress, both in the processing of Gulf War claims and in the collaboration between the health and benefits components of the VA with regard to Gulf War issues. Our testimony includes information on the adjudication of Gulf War claims, including an update on the second review of these claims; the most common illnesses claimed and any trends or patterns that have emerged in these claims; initiatives that will aid in claims processing; and the interaction and coordination of efforts between VHA and VBA.

If I could, I would like to summarize some of the findings that we have in the testimony. I will be rounding off some of these numbers. They are not precise, but they are very close. Concerning all Gulf War era theater and conflict veterans, we have decided some 704,000 claims. We have approximately 103,000 claims yet to be decided. But, of the ones decided, we have had grants of service connection 630,000 times. That is about an 89 percent grant rate.

Of the veterans who were just in the conflict or in the theater itself, we have decided about 202,000 claims. Of those, we have granted 178,000. That is approximately an 88 percent grant rate. Concerning undiagnosed illnesses, there were approximately 11,000 claims. That constitutes a little bit less than 6 percent of the total claims received from Gulf War veterans. Of those 11,000, we have granted about 3,000, or 27 percent. Of the ones that were denied for undiagnosed illness, we have granted either compensation or pension for other reasons in about 38 percent of the cases.

Of the conditions that we found, the undiagnosed conditions in Gulf War veterans, the most prevalent are musculoskeletal, neurological, systemic, lower digestive and skin. I will make some general observations, because I think it is important that you understand this in context—Gulf War veterans have the highest percentage of veterans receiving compensation of any cohort of veterans going back to the Second World War, and including that war. They have the highest number of individual service-connected conditions per veteran of any war time era. The service-connected conditions found in Gulf War veterans, in general, are very similar to earlier cohorts with one exception; we find no psychological conditions ranked in the top 20.

VA has spent a considerable amount of time on outreach to Gulf War veterans, and I think some of the statistics regarding the number of claims and the number granted speak to that. We have also spent a considerable amount of time training our employees, a lot of which is outlined in the testimony. Regarding research on the health concerns, VA, DOD, and Health and Human Services have spent approximately $134 million over the last 6 years researching Gulf War issues. They have conducted basic biomedical research, patient-focused research, and epidemiology research.

There are also several initiatives to translate this research into basic clinical treatment. We have asked—or the Under Secretary for Health has asked—the National Academy of Sciences and the Institute of Medicine to conduct a scientific and medical literature review on Gulf War issues. There has been good cooperation between VBA and VHA to exchange data on Gulf War issues.

I guess I will say in sum that, while we have a lot to do, I think we have made considerable progress. Although I heard some of the opening remarks that we are in denial or something like that, I do not think that is true at all. I believe that we are firmly committed to doing the right thing. That is not to say we have done everything we should, but we are still working at it. But an awful lot of people have worked very hard to try to address what is a very difficult and complex issue for our society, not just for VA.

That concludes my opening remarks, Mr. Chairman.

[The prepared statement of Joseph Thompson appears on p. 104.]

Mr. QUINN. Thank you very much. For all of the subcommittee members, we would make note that Mr. Thompson's written statement is in your package and there for your review.

I am going to begin with a question, and we may take a couple of rounds here, I know, because there is interest here, Joe. You just mentioned—and thank you for the numbers. Sometimes, they get a little bit much for us, but they will be helpful because they are written and submitted. So, thanks for doing that. You just mentioned that the Under Secretary for Health asked for a literature review from the National Academy of Sciences. What do we hope to get? So, is that a review of existing literature and you are just asking them to sort of organize it and draw some summary?

Mr. Joseph THOMPSON. If I could ask Dr. Murphy to speak to that.

Dr. MURPHY. The genesis of the NAS review was initially a recommendation from the Presidential Advisory Committee on Gulf War Veterans' Illnesses, and it is patterned after the Institute of Medicine review that we have ongoing for Agent Orange. Essentially, what they will do is evaluate a list of 30-plus exposures and look at the literature on those exposures to try to find out whether there are any recognized associations with health effects.

Mr. QUINN. It is almost reviewing some cases, then.

Dr. MURPHY. It is reviewing scientific literature——

Mr. QUINN. On a case.

Dr. MURPHY (continuing). On exposures such as pyridostigmine bromide, depleted uranium, etc.

Mr. QUINN. Okay.

Dr. MURPHY. And, if the literature shows that there are associated health effects, the Secretary will look at that information and decide whether there is evidence of a positive association and create potential presumptions of service connection.

Mr. QUINN. I apologize, Doctor. When you said exposure, I thought you meant individual cases; but I understand what you mean now. In terms of that, when is that expected to be finished? Do you know?

Dr. MURPHY. The first report will be completed in August of 2000, and the exposures that they will be looking at in that report will be pyridostigmine bromide, the vaccines, anthrax, botulinum toxin, and squalene adjuvant, uranium and depleted uranium, sarin and cyclosarin.

Mr. QUINN. Who receives the report, the Secretary?

Dr. MURPHY. It is a report to the Secretary, with an analysis by the Under Secretary for Health.

Mr. QUINN. I am just wondering, and then I will yield, because I do not want to ask too many questions here, will we get a chance to see that report?

Dr. MURPHY. Absolutely. The Institute of Medicine always provides a copy to the committee members, and they will be briefing you on the results of their findings.

Mr. QUINN. I guess that is what would be most important. You got to my question before I had a chance to ask it, because you are the expert at all of these scientific, chemical kinds of things. We would need to be briefed on that when it becomes available in August, and I think you can tell there is enough interest in this subcommittee that, without officially asking for that—I will, if I have to—but we would like to have a brief on that when it comes out.

Dr. MURPHY. That is a routine, and we will make sure it happens.

Mr. QUINN. I appreciate that. Thanks very much, Doctor. Thank you, Joe. Mr. Filner.

Mr. FILNER. Mr. Chairman, just as a matter of procedure and courtesy to the first panel and their working day, Mr. Reyes suggested that we might want to ask this panel some questions after we hear panel two and three. I was wondering if somebody might be able to stay around to be able to answer if we have further questions.

Mr. QUINN. Or double jeopardy, too. You cannot get blamed for the same thing twice. Dr. Murphy has indicated she, at least, would be willing to stay. Is that true?

Dr. MURPHY. Yes.

Mr. QUINN. Just for the record, she has indicated she will stay. Thank you. Good suggestion.

Mr. FILNER. Thank you. I guess it is required that someone have the name "Thompson" to be hired. Is the other Mr. Thompson available for the panel, if he can come up, just so I can ask him some questions also?

Mr. QUINN. There he is.

Mr. John THOMPSON. Yes.

Mr. QUINN. Thanks.

Mr. FILNER. Thank you. Joe, just let me ask you a couple of facts. I want to get to the other Mr. Thompson on the interpretation. From the data you gave us, only about one quarter of claims based on undiagnosed illness are upheld. That is correct; right?

Mr. Joseph THOMPSON. Twenty-seven percent, I believe.

Mr. FILNER. I am not a doctor and I am not a lawyer, but if people come in with a series of conditions that we all know what they are, basically, part of a list, and say they are suffering from this since they were in the war, since they got home, it seems almost automatic to me that, unless they are lying about the symptoms, that falls under undiagnosed illness and they ought to be given the benefits. What would lead you to such a high turndown rate?

Second, I understand a later witness is going to testify—I do not see any of your data on this—that a high percentage of those refused are sent back for either—I am not sure—overturned or sent back for more information. So, why is such a higher percentage, if that is true, sent back?

Mr. Joseph THOMPSON. If I could, I would like to make a statement. Then I am going to ask Bob Epley, who directs the Compensation and Pension Service, and who is responsible for writing the policy on what we administer in the regional offices, and perhaps Jack Thompson, as the Deputy General Counsel to speak on this issue. But let me make a general statement on that. The undiagnosed illnesses, as I mentioned in my testimony, are a very, very small fraction of the claims that we have received from Gulf War veterans. We have granted an extraordinary number of conditions.

Mr. FILNER. I hate to interrupt you for a second, but—the problem with statistics is that it may hide the truth. If the institution or the government of this country spends 5, 6, 8 years telling people that we do not know what you have got and if you have it, you are crazy anyway, I do not expect to find a large number of people coming in and saying, "I am crazy and I am suffering from stuff I do not know about."

They are going to try to find a reason that makes sense, both to you and to them, that they come in. So, if you tell me that you only have a small percentage—and you are almost implying, Joe, that therefore it isn't a problem.

Mr. Joseph THOMPSON. No.

Mr. FILNER. I mean, that is almost what you are saying here. The statistics hide some of the reality here; that people may not want to come in on that basis because you set it up against them. The whole government is set up against those folks.

Mr. Joseph THOMPSON. I was trying to make a broader point, which is that we grant hundreds of thousands of service-connected disabilities. There is no bias in the department against granting service-connected disabilities. What we are saying is we have carefully reviewed these claims multiple times. These are among the most complex decisions we make in VA regional offices. They are given the utmost scrutiny, and my conclusion is that, based on the facts and the law, we are granting wherever we can, and that there is no conspiracy, there is no effort to try to deny them their benefits. It is simply that the way the law is written, the way your compensation program is structured, we are granting about as many as we can. That is our belief. I would ask Bob Epley, if I could, to add somewhat on how the adjudicative process works in our regional office.

But, you know, there is no bias against granting a claim. If it was easy to grant, we would have done it a long time ago. But these are very complex decisions and I am very comfortable that they are being treated fairly.

Mr. EPLEY. The adjudication of these claims involves multiple steps. We do look at them to determine whether or not we can grant service connection on a direct basis with a diagnosis. When we get a claim that indicates the possibility of undiagnosed illness, we are generating examination requests, looking for a general medical examination with specific instructions to compile all diagnoses, to provide statements to the rating specialist as to whether or not any of those symptoms can be related to a diagnosed condition or not—and, where appropriate, to ask for specialty exams, to continue that process and make sure we know at the end we have information for our rating technicians on all of the things claimed or observed by the examining physician and whether they are associated with a diagnosis.

The rating specialist then should be doing an analysis, a traditional review, to determine what we can pay based on diagnosed conditions and if there are symptoms undiagnosed that remain, to go through a separate process and rate those claims. It is a complex——

Mr. FILNER. I don't know what a claim based on undiagnosed illness is. Does someone come in and say, "I have an undiagnosed illness?" I mean, how can you know that there are 11,000? You try to find a diagnosis; right? And anybody who does not have a diagnosis is part of the 11,000? Is it those left after you have made a diagnosis?

Mr. EPLEY. It should not be that, Congressman. It is a difficult process, but what we should be doing, what our instructions say to do, is to catalog all of the things asserted by the veteran. And you are right; they do not all come in and say, "I am claiming compensation for an undiagnosed illness." More likely, they will say, "I am claiming compensation; I have symptoms; I have things that are making me disabled." And, you know, some are sophisticated and can say, "It may be a neurologic condition; it may be chronic fatigue." Some do not have that level of sophistication.

Our technicians should and do catalog what they assert and ask of the examining physician to add what they observed that may or may not have been asserted.

Mr. FILNER. If I have the Chairman's permission—I know I will come back another round, and I will get to the attorney in a second—but Mr. Stump, in his letter to you, which is now part of the record, pointed out, as others have, and rather than read it, I will just use my layman's summary of it—that someone who has a diagnosed illness, whether it is gastrointestinal or chronic fatigue syndrome, and cannot document that that occurred or there were any symptoms of it during the actual conflict, does not get benefits, while if that same person was classified as an undiagnosed and the presumptive period applies, they would get benefits. Now, how does that happen?

Mr. EPLEY. That is correct. I have read the letter from the Chairman. It is correct that if a veteran came in with an array of symptoms and was diagnosed by his private physician or by a VA examining physician, let us suppose, with fibromyalgia or chronic fatigue syndrome, and if the onset of that was after the presumptive period for direct service connection, that person may be denied. If a similar fact pattern presented, but was not diagnosed, we would certainly consider that under the undiagnosed illness law.

Mr. FILNER. Okay. I will get back to this in my second round, Mr. Chairman, but that is exactly the problem that we, as a committee, are having. You just said on the record that—that goes against the intent of every one of us when we voted for that law. We said that if someone has those either undiagnosed or, I think the law said, poorly defined or not clearly defined, and I will tell you fibromyalgia is not a clearly defined disease because some of the HMOs will not even pay to do the treatment. They call it subjective.

So, you are diagnosing an illness that one part of the medical profession says is subjective, and then you cannot find any—or the patient cannot find any symptoms during the actual conflict, so they are denied benefits. I think that is a crazy situation that we need to remedy right away.

Mr. QUINN. Thank you, Mr. Filner.

Mr. Reyes, questions for the panel?

Mr. REYES. Yes, Mr. Chairman. Thank you. I have a hard time following, also, that rationale when we have a number of veterans in my district that have come forward and have been rejected or denied because there is not any one ailment. I mean, they complain about the same kinds of things that we have got here in the record, and then they continue to be told that it is either stress or it is something unrelated to their service in the Gulf.

The greater issue, I think, is that I hope that we have, as a Congress, communicated to the Veterans' Administration that we are concerned about the fact that we sent our young men and women in uniform into a war that we do not have all the answers to, in terms of what they were exposed to. Yet with that concern being made plain to the Veterans' Administration, we still are not—at least speaking for myself—I am still not satisfied that everything that can be done for our men and women that served in the Gulf War has been done. In fact, there is still a tremendous amount of frustration.

I can tell you, Mr. Thompson, that, as you know, we invited you to come to El Paso for an annual veterans town hall meeting last August, and because of your schedule, you were not able to. So, I hope that you will continue to keep that in mind, that I would like for you to come to El Paso so that you can hear some of these veterans and the frustration that exists with the VA specifically about this.

Part of that can be substantiated by my colleague, Bob Filner, who was there this past late August, when we did hold the veterans town hall meeting. But I have a question regarding the issue of physicians examining Gulf War veterans and the medical records of veterans who have filed claims for compensation who frequently report newly acquired lack of tolerance to previously-used food and drugs.

The question is are veterans seeking compensation for these undiagnosed illnesses being asked whether or not their symptoms are associated with specific foods, drugs, odors, things like that, because this is a real issue in terms of ailments that have a delayed trigger, for lack of a better way of discussing it or describing it? So, are these veterans being asked these questions?

Dr. MURPHY. In some cases, they are. I cannot say that it occurs in the majority or in all cases. Chemical intolerance has been proposed as one of the things that is increased in Gulf War veterans, and chemical sensitivity was one of the questions that we asked on the National Gulf War Survey. In fact, reports of chemical sensitivity were found to be elevated as a symptom of Gulf War veterans, as compared to the rates in the non-Gulf veterans participating in this survey. So, that has been an issue and we have looked at it.

You have to recognize, however, that multiple chemical sensitivity, as a disease, is not recognized as a valid diagnosis by a number of medical professional organizations or the medical community in general. Therefore, if someone had those symptoms in association with, for instance, headache, memory loss, or any of the other things that have been reported in conjunction with chemical intolerance, they could be compensated under the undiagnosed illness compensation regulations.

Mr. REYES. You know, I am always concerned when I get answers that they could be or they might be or that we are asking in some cases and in some cases, we are not. What precludes the Veterans' Administration from standardizing these things and from making a decision, having so much information already in terms of what we—not so much what we know, but what we don't know? And, you know, in the context of what we are talking about here and the concern that we have as a Congress about doing the most that we can for these veterans who—obviously, there is something wrong. Nobody medically has yet to put their finger on it, but there is obviously something wrong or all of these veterans, all across the country, would not be complaining about some of the same basic things. What prevents us from recognizing that there is a problem and compensation them for that?

Mr. Joseph THOMPSON. The whole idea of compensating undiagnosed illnesses is unprecedented in the history of this country. That was a major step forward, I believe an extraordinary step, to compensate people for undiagnosed illnesses. The question is are we compensating enough of them? Again, within the law as we understand it, we believe that we have given them as much latitude as we can in terms of compensating them.

We think that the 27 percent grant rate is about where it should be, given the way the law is structured and the way our compensation system is set up. If the law were changed, we can always be more liberal.

Mr. REYES. So make a recommendation to us. How do we change that law? I have already told you the intent of Congress is the concern that we have got for these men and women that went and fought in the Gulf and the ailments that have come out of it. How do we phrase it or how do we change the law so you take care of them?

Mr. Joseph THOMPSON. I would ask Jack Thompson, who is our Deputy General Counsel—he may be able to speak to that.

Mr. John THOMPSON. Yes. Well, Congressman, the Congress spoke to this last fall. In fact, it spoke twice within a very short time in enacting two provisions which require the Institute of Medicine review of literature, which Dr. Murphy described earlier, and then require the Secretary to do certain things with respect to that information as it comes back available.

Under one of the laws, the Secretary is to take the information, with respect to the associations between these exposures and health effects, and report to Congress as to what presumptions in law ought to be enacted. Under another provision enacted nearly simultaneously, the Secretary is required to take the information and, by rule-making, create presumptions of service connection for illnesses found to have a positive association.

And, so, that is the direction VA intends to go as we implement these two laws enacted at the end of the 105th Congress.

Mr. REYES. So, you did not answer my question. What do we need to say in order to get the intent of Congress, to take care of these men and women? We obviously have a big problem here, because you are moving at a snail's pace to address the concerns of Congress. So, what we want to do is kind of turbocharge it.

You know, Mr. Chairman, maybe we ought to do something legislatively like they do in baseball—tie goes to the runner. Tie goes to our veterans, you know, unless there is a—we cannot get answer in terms of a direct question on how do we change, how do we correct, and how do we address—if we cannot get one from them, who do we get it from?

Mr. QUINN. Well, I have a couple of suggestions, but if we can't, we will go out and make our own, and then they will tell us what is wrong with it and get us close to where it is supposed to be, until we see a broader spectrum of veterans getting in. That is just a suggestion. I am not a lawyer or a doctor, or anything, as a matter of fact.

Mr. REYES. Thank you, Mr. Chairman.

Mr. QUINN. Thank you, Mr. Reyes.

Mr. Hayworth, do you have anything now?

Mr. HAYWORTH. I just simply want to point out to my friend from New York, you are the Chairman. That counts for something.

Mr. QUINN. Sure, it does.

Mr. HAYWORTH. In all seriousness, I want to thank my colleagues from Texas for raising this matter, because it has been a matter of grave concern to my constituents, and the frustration of dealing with the medically undiagnosed or unknown is extremely frustrating. But there is no doubt there is great concern that has been expressed to me by a number of veterans in our district. I appreciate the panel's testimony and I appreciate the sentiment of my friend from Texas and his resolve to deal with this issue.

Mr. QUINN. Thank you, Mr. Hayworth. Mr. Rodriguez.

Mr. RODRIGUEZ. Thank you, Mr. Chairman. I know, Mr. Chairman, you mentioned earlier in your question the literature review. And I know you are an English teacher and I know Congressman Reyes talked in terms of getting to those undiagnosed—diagnoses that have not been determined. Before I got elected to Congress, I was a state legislator, and right after the individuals had come in—they had been in San Antonio from the Gulf War about a month or so—I had a chance to go visit them on another issue. All we talked about was—in terms of their comments—and I still recall them telling me, "There is something wrong. I do not feel the way I used to. I get tired. I am not as motivated anymore. I get fatigued."

I remember talking, not to one, but a multitude of them, and they had a variety of concerns that they had. I want to follow up on the review of literature, because I taught at a university for 11 years, and when I asked students to do a literature review, a lot of times there were gaps in the literature. I know that you have been there and I know you have indicated there are gaps in terms of where you find them being unable to really diagnose because of those gaps that exist there.

Can you define for me some of those gaps that exist in terms of maybe where there is a need—because all you are going to find in the review of the literature is what is out there. What I am asking is, is there something else—and I know that there is not enough research that has been done—that needs to be done in order to zero in and come to a conclusion in some of those areas—yes, there is a problem or no, there is no, or there might be some?

Dr. MURPHY. There are a lot of research projects already ongoing, and some of them are looking at either diagnosed conditions or undiagnosed conditions, and some of them are studying the exposures and trying to determine if there are health effects. One of the things that the Institute of Medicine will do is review the literature; and, in some cases, these clusters of symptoms may provide the kind of information that the committee would like to see inform the compensation process.

A number of the epidemiology studies have found a fatiguing illness—a chronic fatigue-like illness symptom cluster is present in Gulf War veterans at a higher rate than in the military members who did not deploy.

There are a couple of areas where I think we could expand our research. There has been a suggestion that a longitudinal study, or a study serially over the years of Gulf War veterans' health and comparing them to those who were not deployed, may be helpful. In addition, the——

Mr. RODRIGUEZ. Could I ask you what would it take for us to do that?

Dr. FEUSSNER. Excuse me, sir. What would it take to do——

Mr. RODRIGUEZ. The longitudinal study. I am sorry. You were not listening. Okay. The longitudinal study that she just mentioned.

Dr. FEUSSNER. I think it would just take time and money. The longitudinal study—there are several longitudinal studies that are ongoing now. The largest one has to do with the rate of death and the cause of death among Gulf War veterans, and that study will go on at least for another 15 years.

There are also treatment trials that are going on that are longitudinal, but much more time limited, like over a 2-year to 3-year period; and then the Congress has instructed a multi-phase study, which is again through time, and we are in phase three of that study, which involved evaluating veteran patients, their spouses and their children, and doing physical exams.

Mr. RODRIGUEZ. Okay. I am getting a contradiction. I asked for a review of the literature, and you said we are doing—there are a lot of studies out there. That is what I heard; there are sufficient studies. But then you did pinpoint that there is a need for additional—and now you are telling me that there are some longitudinal studies already in effect.

Dr. FEUSSNER. Yes, there is. But I think there is a hole in the research portfolio in terms of those longitudinal studies. And the hole in the research portfolio has to do with an assessment of health that does not result in death; that is, it is morbidity, health status, quality of life sorts of measures. We have not done a longitudinal study looking systematically at those kinds of issues at all, and that is a——

Mr. RODRIGUEZ. Where has most of the funding for the studies come from?

Dr. FEUSSNER. Most of the study—excuse me, sir. Most of the funding for the studies has come from DOD, VA, and HHS, in that order, with the lion's share of the funds coming from DOD.

Mr. RODRIGUEZ. Thank you.

Dr. FEUSSNER. You are welcome.

Mr. QUINN. I intend another question. I think the rest of the panel wants another round. I am just going to take a minute to—it is not a question yet, but to try to explain a frustration that we are all having. I think you sense it. I think you are a little frustrated in your jobs, as well, when you talk about the law and what you can do and cannot do. So, we are a little frustrated. You are a little frustrated. For darn sure, the vets are frustrated as heck.

Whenever we are talking about making laws up here, if it is an environmental law, we check with environmentalists. If it is a tax law, we check with the people that know taxes. If it is agriculture, we check with the people that know agriculture. The difficulty here, I think, is we are talking about medicine, which changes and sometimes becomes subjective. But I cannot—we cannot—ignore the fact that veterans show up all across the country and say they are sick. They have no reason to lie. I think that is part of our frustration and we need to find a way to satisfy them.

So, we will continue to do the studies. There is one due in August from the National Academy of Sciences. We will get some information. I talked to a vet from Tyler, TX, this morning. When I mentioned the study, he said, "Go ahead and study it all you want. My doctor gave me a year to 16 months. So, study all you want. We will all go away and then you will not have to worry about us."

Certainly, that is not what you are about and it is not what we are about, either. So, having said all that and expressed this frustration, which is why we are here, and 19 hearings have heard it, Mr. Thompson, the lawyer, we have heard you all talk about, given the law as it exists, we are doing a pretty good job—Mr. Thompson, the Deputy Secretary, said that, given what we have got to work with, we have got 85 percent, 89 percent, whatever those numbers are. Do you think the law needs to be reviewed?

Mr. John THOMPSON. I think that Congress took an extraordinary step last fall when it enacted the Persian Gulf War Veterans Act of 1998. That sets up a mechanism with some of the most liberal provisions ever enacted for creating presumptions based on the literature review that is being done by the Institute of Medicine and other literature of which VA becomes aware.

I guess my advice, for someone sitting in your seat, would be to see what comes of that, because the law is extremely liberal in terms of the standard for creating presumptions of service connection only for Persian Gulf veterans.

Mr. QUINN. So, wait awhile.

Mr. John THOMPSON. I think Congress needs to take stock of what it has already enacted and the reasons for enacting it, and then determine whether it has gone far enough.

Mr. QUINN. Mr. Thompson, the Under Secretary, do you think the law needs to be reviewed?

Mr. Joseph THOMPSON. I agree with Mr. Thompson's assessment. I think that, again, we have gone about as far as science is taking us and maybe perhaps past that in terms of compensating veterans. You can write a law and tell us to compensate any category of veterans and we will do that, certainly. The question is how far ahead of the law and science do you want to get?

I think, as Jack Thompson mentioned, waiting for the scientific community to make their recommendations about their findings is the prudent policy.

Mr. QUINN. Thank you. Mr. Filner.

Mr. FILNER. You know, Mr. Reyes had asked a direct question about the law that was passed in the 103rd Congress. You answered the question based on the law we passed last year. I said in my opening statement that I was going to ask the same question Mr. Reyes had. Neither of you have answered it. Mr. Quinn just tried to ask the same question and you answered the wrong question again.

Let me read you the letter that Mr. Stump wrote more than a year ago. He said, and I am quoting our Chairman at the end of his letter. He said, "For the Department of Veterans Affairs to adjudicate cases on the basis of a rigid distinction between diagnosed and undiagnosed conditions is to ignore altogether what we have come to learn about chronic fatigue syndrome, fibromyalgia, and related ill-defined conditions. Continued reliance on the current regulation ignores that medicine does not fully understand these conditions and that physicians may or may not diagnose them. As is apparent from the literature, they present with many of the same symptoms which have been described in Persian Gulf veterans from the earliest reports and which were the subject of Congress' effort to service-connect veterans who suffer from symptoms of illness which cannot be clearly defined. Thus, for the regulation which implements Public Law 103–446—"

That is what I am talking about. I am not talking about what we passed last year. You are always looking for—it seems—ways to block what we want to do. But I am talking about Public Law 103–446. Okay? You got it, Joe? You got it, Jack?

"Thus, for the regulation which implements that law to effectively rule out service-connection under that law in any case in which a VA physician happens to assign a diagnostic label associated with ill-defined illness is to frustrate the purposes of this law"—frustrate the purposes of our law—"and to raise a serious question of deprivation of due process."

This comes from the Chairman of the Veterans Committee of the United States House of Representatives, who has played a big role in writing the law. Now, you came back with a seven-page opinion—and, Joe, you are learning the wrong stuff in that bureaucracy. You are talking like all the bureaucrats, which previously you did not—I mean, when I read your letter, I said, "This is not the Joe Thompson I once knew." I guess someone else is writing it for you. It is a combination of gobbledy-gook that no person who is trying to understand this stuff can really understand.

The question is if you think that our law did not meet our intent, and the Chairman said that this is our intent, you say, "I am sorry. I have a responsibility to enforce the law." Why not—and this is the fourth time it has been asked today—why not suggest to us ways that we can meet our intent? The intent is clear. We want to compensate people who have Persian Gulf War illness even though we do not know what caused it, and you are telling us—Joe, you said three times—under the law and under the structure of benefits, we cannot do it.

If you do not want to tell us what to do, just tell us the problems. Is it money? What is it that prevents you from making a suggestion? You are an attorney. You can write a law to meet our intent; right? You spent hours and hours telling us how you did not see how it met the intent. Well, spend the same amount of hours telling us how we can meet our intent. And if you say, "Well, I do not work for you. I work for the VA," then we will direct the VA Secretary to delegate you or somebody to write it for us.

I just do not understand how you spent hours and hours and hours telling us that we cannot meet our intent by the law we wrote. Tell us how to meet the intent. It is clear. We said it a hundred times here today.

Mr. John THOMPSON. Well, I am sorry we have not been communicating very well this morning. I understand now what question you are asking, at least now. Let me say this. I guess it is a truism that we can only spend federal funds as authorized by the Congress, and what we are talking about is what Public Law 103–446 authorized us to do; And let me just read you what the authorizing language is.

It says: The Secretary may pay compensation under this subchapter to any Persian Gulf veteran suffering from a chronic disability resulting from an undiagnosed illness.

Now, it is true that earlier in that——

Mr. FILNER. Are you leaving out stuff on purpose or are you quoting something different?

Mr. John THOMPSON. No, I am quoting from the authorizing language.

Mr. FILNER. I am quoting from the bill. It says: That cannot be diagnosed or is not clearly defined.

Mr. John THOMPSON. That is not the authorizing language. What you are quoting from is the congressional findings portion in the beginning of the statute.

Mr. FILNER. Oh. So, that is not part of the statute?

Mr. John THOMPSON. It is part of the statute and it is useful sometimes in interpreting a statute to look at the statements of congressional findings.

Mr. FILNER. Look, I will grant you that you are right in your interpretation.

Mr. John THOMPSON. Okay.

Mr. FILNER. Tell us how I write the law that you cannot interpret in that way, or do I just have to keep writing laws and you just keep finding them insufficient?

Mr. John THOMPSON. The Chairman's letter to us suggested that he would like to compensate for fibromyalgia and chronic fatigue syndrome.

Mr. FILNER. You are reading what you want to read, Jack. He said the intent is to give benefits to those who have undefined or not very well defined illnesses, and if you think you cannot do it by the law, tell us how we can do it. And you said about eight times that you did not want to, so I will just take that as, on the record, you do not want to help us do this.

Mr. John THOMPSON. No, I have not said we would not help.

Mr. FILNER. We will just keep writing laws and we will just keep giving you jobs to find them unsuitable, I guess.

Mr. John THOMPSON. Congressman, this is the first time I have learned that the committee requires technical assistance to draft something different than what it enacted.

Mr. FILNER. I do not want "technical" assistance, Jack. I want help for our veterans. That is what you are supposed to be doing, and if you think our law did not do it right, then just tell us. Help us find a way. I am not asking for "technical" assistance. I am asking for ways to help our veterans, and you keep finding ways that we cannot help them. Why don't you just once find ways that we can help them; okay? Just have a conversation with me and say, "You know, if you change that sentence, I could not do what I did in my seven-page analysis." I want you to think what is our intent, and do not keep finding legalistic ways around it. Find us ways that we can do it.

Mr. QUINN. Mr. Rodriguez.

Mr. RODRIGUEZ. No questions.

Mr. QUINN. No questions. Mr. Reyes.

Mr. REYES. I guess the question I have is, Mr. Thompson, do you understand what our intent is?

Mr. Joseph THOMPSON. I believe I do.

Mr. REYES. And can you help us in making sure that that gets done by the Veterans' Administration?

Mr. Joseph THOMPSON. I will speak to the same issue Mr. Filner just raised. If you need language from us that we think would meet your intent, we can certainly help you craft that language and, you know, if the law is changed to reflect that, then we will compensate the categories of veterans that you are most interested in.

Mr. REYES. Can we do that, Mr. Chairman?

Mr. QUINN. Certainly, we can, and if the gentleman would yield on his time——

Mr. REYES. Yes.

Mr. QUINN (continuing). I would just point out to all of the subcommittee members that no matter what kind of help we receive or how we modify laws or change laws or write new laws, it is certainly not done at hearings. That much, I know. They are probably done with staff at a couple of meetings at your place, at our place, with some input from whoever wants it, including the Secretary, who I might mention has been somewhat silent on this whole matter, and point out that sometimes with stronger leadership from a Secretary in a department, we get quicker action and maybe our intentions are clearer. Nobody's fault, but from a legal point of view, that might be easier.

But, absent that, for whatever reason, laws are not written at hearings and amendments and changes are not made. I take your offer, Mr. Thompson, in good faith, as it is always given, and suggest to Mr. Reyes and others that follow-up from today probably would be very productive for everybody, to get us to a point where we have got the right legal people in the room and the right elected people and the right medical people to get us off square one, and I appreciate the offer. That is my question for the second round.

Mr. LaHood, anything now?

Mr. LAHOOD. No.

Mr. QUINN. That is the third round. Excuse me. Before we dismiss this panel, is there anything anyone else wants to offer before we have panel two come forward?

Mr. FILNER. Just briefly.

Mr. QUINN. I yield to Mr. Filner.

Mr. FILNER. I would like to introduce into the record, Mr. Chairman, with unanimous consent, Mr. Evans, the ranking member of our committee, had intended to be here, and he wanted to introduce a report which was issued on the 25th of October entitled "VA Data Shows Increased Percentage of Undiagnosed Illness and Total Disability Among a Certain Group of Veterans Who Served in Southwest Asia Between August 2, 1990 and July 31, 1991." If I may introduce that——

Mr. QUINN. Without objection, it is so ordered.

(The report appears on p. 51.)

Mr. FILNER. Thank you, sir.

Mr. QUINN. Let me ask counsel. The normal hearing—if anybody wants to submit things for the record, must it be submitted today or do we have like 5 days to submit anything in writing? Does anybody know the answer to that one? Five days. So that any members who are here or are not here that would like to submit something, we would be happy to take it. It helps us be better informed.

Thanks, Bob.

Oh. Excuse me. Thank you. Counsel on the other side advises me that we have follow-up questions, too, that we can get to you, and we will give you more than 2 weeks, I am certain, to get the answers to them. Thank you all for your input this morning, and we are about ready to call our second panel, Claudia Miller, M.D. and Victor Gordan, M.D.; Claudia, from the University of Texas, and Dr. Gordan, from the Manchester, New Hampshire VA Medical Center.

Dr. Miller and Dr. Gordan, as you take your seats, I want to mention also, while we are putting things on the record, I want to make mention that Ms. Julia Dyckman, a Persian Gulf veteran, has submitted testimony for the record. Her testimony has been included in the packet of information that was sent out to all subcommittee members before this morning's hearing.

I want to interrupt just for a minute. It is always nice to have folks from back home and nearby. So, I want to yield to our friend, Ciro Rodriguez, for some introductory comments and also say that we miss you on the subcommittee and we appreciate the work you do on the full committee. It is very helpful, Ciro.

Mr. RODRIGUEZ. Thank you, Mr. Chairman. Well, I am always proud, as you indicated, to recognize somebody from San Antonio, one of our own, Dr. Claudia Miller. Among the Gulf War veterans, scientists and activists, policy makers, she needs no introduction. Dr. Miller is a physician who is a board-certified allergist and immunologist. She is currently an associate professor at the University of Texas Health Science Center at San Antonio. Her area is with environmental and occupational medicine in the Department of Family Practice at UT.

Her research interests include the health effects of low-level chemical exposure, pesticides, indoor air pollution, and Gulf War veterans illnesses. Dr. Miller is nationally renowned and has been appointed to several federal advisory committees, including the National Advisory Committee on Occupational Safety and Health. She is also on the National Toxicology Program Board of Scientific Counselors, and she has also been part of the Department of Veterans Affairs from 1993 to 1998, regarding Persian Gulf Expert Scientific Advisory Committee and has been providing data in that area.

She has authored a variety of articles and books. One of them is the New Jersey Report on Chemical Sensitivity, which won the award from the World Health Organization, and a professional acclaimed book, also, Chemical Exposures: Low Level and High Stakes. In addition to that, I want to just indicate that Dr. Miller has served as a consultant for the Gulf War Veterans Illness—to the Chief of Staff at the Houston VA Medical Center, and has been up there. So, I want to personally just introduce her to the rest of the members of the subcommittee. Thank you for hearing Dr. Miller.

Thank you.

Mr. QUINN. Thank you, Mr. Rodriguez.

Dr. Miller, we are pleased and honored to have you with us this morning. Dr. Gordan, we are pleased and honored to have you with us, as well. I would remind both of you that we would like you to keep your oral testimony to about 5 minutes or so. Your full statement, of course, is part of the record this morning.

Dr. Miller, why don't you begin?

STATEMENT OF CLAUDIA S. MILLER, M.D., M.S., ENVIRONMENTAL AND OCCUPATIONAL MEDICINE, THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO, TX

Dr. MILLER. Thank you. It might be a real challenge to keep it to 5 minutes, but maybe the other members can yield the balance of their times, since they did not use all of theirs. I will try the best I can.

Mr. QUINN. I think not. We ended up going a little bit over on some of our time for the VA. Please continue.

Dr. MILLER. All right. I will try to then cut out a few portions.

Mr. QUINN. We would appreciate it.

Dr. MILLER. Thanks, Congressman Rodriguez, for the very cordial introduction. I have been asked to explain how physicians who see sick Gulf War veterans can observe the same or similar symptoms and interpret them as either diagnosed or undiagnosed illness. Even when doctors apply monikers to these patients' illnesses, like depression, migraine headaches, asthma, irritable bowel, fibromyalgia, and so on, these monikers do not explain why the veterans are ill.

Most have symptoms involving several organ systems simultaneously. For these individuals, there is no unifying diagnosis, no etiology specified, and no disease process clarified. In truth, all of these veterans are undiagnosed because what we are dealing with appears to be an entirely new mechanism of disease not covered by standard medical diagnoses, one which presents itself symptomatically as different conditions to different specialists.

Some private practitioners go so far as diagnosing multiple chemical sensitivity, or MCS, which is not a diagnosis in itself, but rather just another manifestation of an underlying disease process. So, what is at the core of this myriad of symptoms that has come to be called Gulf War Syndrome? What is the underlying disease process?

The key is in the new-onset intolerances these people share. Over the past 6 years, I have served as a consultant to the VA's Referral Center for Gulf War Veterans in Houston. The vast majority of the veterans there report new intolerances since the war. Among the first consecutive 59 patients, 78 percent reported new-onset chemical intolerances, 40 percent reported adverse reactions to medications, 78 percent described new food intolerances, 66 percent said that even a can of beer made them feel ill, 25 percent became ill after drinking caffeinated beverages, and 74 percent of smokers felt sick if they smoked an extra cigarette or borrowed someone else's stronger brand.

More than half reported new intolerances in all three of these categories, chemicals, foods, and drugs. One mechanic said that before the Gulf War, his idea of the perfect perfume was WD–40. Since the war, WD–40 and a host of other chemicals make him feel ill. Many veterans no longer fill their gas tanks with gasoline because the vapors make them spacey or sick. Some will not drive because they become disoriented in traffic and they fear they are going to cause an accident, or they cannot find where they left their cars, where they are going, or get lost in formerly familiar areas.

One VA study found a 30 percent excess of motor vehicle deaths among Gulf veterans and interpreted this as possible increased risk-taking behavior on the part of veterans. What the veterans tell me is that they get confused, go off the road, mistake the accelerator for the brake, and have trouble judging stopping distances if they are exposed to gasoline, diesel exhaust, or freshly tarred roads.

Researchers at several universities have noticed similar multisystem symptoms and intolerances to common chemicals, foods, and drugs among veterans, and a recent CDC study found ill Gulf vets reported more chemical intolerances then did healthy ones. These studies are confounded by a phenomenon called masking. This occurs when people become intolerant to many different substances. As they go through a day, their symptoms are triggered by fragrances and diesel exhaust and hair spray, foods, medications, and all of these pile up during the day, so they feel sick most of the time. No one cause can be isolated because there is too much background noise, and patients often underestimate the number of exposures that affect them.

This problem is not altogether new. German researchers describe similar intolerances in chemical weapons workers after World War II. Nearly 25 percent of agricultural workers on a California registry for organophosphate poisoning reported that even a whiff of pesticide made them sick, and many had quit that occupation because of this. Their symptoms were similar to Gulf War veterans' symptoms.

Dozens of governments workers, a decade ago, after the EPA remodeled its headquarters building and the building became a sick building, reported similar kinds of problems which persist to this day. Similar outbreaks of chemical intolerances have been reported in more than a dozen countries. These observations suggest that we may be dealing with an entirely new mechanism for disease, one which has been referred to with the acronym, TILT, or Toxicant-Induced Loss of Tolerance.

Any one toxicant appears capable of initiating this process. TILT involves two steps, initiation and triggering. First, a single acute or multiple low-level exposures to a pesticide, solvent, combustion products or some other chemical causes loss of tolerance in a subset of those exposed. Thereafter, very low levels of common substances trigger symptoms; not only chemicals, but various foods, medications, alcoholic beverages, and caffeine. Symptoms typically involve several organ systems.

It is these intolerances that are the hallmark of TILT, just as fever is a hallmark symptom of infectious diseases. Over the past several years, the finger has been pointed at a number of potential causes, everything from oil well fires, and I do not need to go into those, and other exposures. What actually set off the Gulf War veterans? The answer is all of these. Exposure to any one or any combination of these toxicants may, in fact, be capable of causing a general breakdown in tolerance that can result in a plethora of beguiling symptoms.

We do not know exactly how this breakdown in tolerance occurs. We do know that rats with nervous systems sensitive to cholinergic agents, like organophosphates, are also intolerant of diverse drugs, and they also have increased gut permeability which, in humans, is the equivalent of having food intolerances. This suggests that the breakdown might, in part, involve the cholinergic nervous system, which regulates processes throughout the body.

How can these people be helped? Currently, we do not know, but one of the biggest obstacles has been the symptoms themselves and some of the diagnoses you have heard today, which serve as red herrings, diverting attention away from the central problem. What we do know is that Gulf veterans who have come to recognize what sets them off and who avoid these exposures tend to improve. We need to apply this understanding to the diagnosis and treatment of other such veterans.

The first thing that needs to be done is to set up unmasking studies in which sick Gulf War veterans can be removed from exposures that are setting them off. This can be achieved by putting them in an environmentally controlled hospital unit where we can get them to a clean baseline and subsequently reintroduce things like caffeine, fragrances, or various foods, starting to identify some of the things that are causing their flare-ups. With avoidance, it is hoped that they, too, can improve.

This combined diagnostic-therapeutic approach would eliminate much of the confusion that is the focus of this hearing. There is no simple answer to the Gulf War illness and no single toxicant is likely to have caused it, but if we concentrate less on the original toxicants and more on the underlying disease mechanism, I believe we can make progress in understanding why these people are sick and what we can do to help them.

Thank you.

[The prepared statement of Dr. Miller appears on p. 117.]

Mr. QUINN. Thank you, Doctor. Thanks very much. Before we entertain questions for Dr. Miller, we are going to hear testimony from Dr. Gordan.

Doctor, go ahead and continue.

STATEMENT OF VICTOR GORDAN, M.D., STAFF PHYSICIAN, VA MEDICAL CENTER, MANCHESTER, NH

Dr. GORDAN. Mr. Chairman, thank you for giving me this opportunity to testify before the committee. I have been in charge of the Persian Gulf Registry since 1992. I am also in charge of the Persian Gulf Illnesses Clinic. The committee asked me to provide testimony concerning, A, my experience in undiagnosed illnesses in Gulf War veterans; B, clarify how physicians have attributed similar signs and symptoms of poorly-defined illnesses to a diagnosed or undiagnosed condition. Because of time limitations, I will be concise in my testimony. For more detail, you have my written testimony.

I have evaluated 668 Persian Gulf veterans since 1991. I divided the veterans who have symptoms into two subgroups; one subgroup which contains a majority of these veterans who have undiagnosed illnesses. The other subgroup is rather small and contains veterans older than 50 years having both undiagnosed and diagnosed illnesses.

Example of diagnosed illnesses: arthritis; hypertension; diabetes. I would like to strongly emphasize that these veterans in the second subgroup, besides having these diagnosed illnesses, present other symptoms which do not fit in the frame of the diagnosed disease. The symptoms for which I could not find an explanation from clinical evaluation and laboratory tests constitute undiagnosed illnesses. In conclusion, all veterans evaluated by me who present symptoms have undiagnosed illnesses, and the small subgroup I just described have both diagnosed and undiagnosed illnesses.

The clinical tool used by me in order to reach the conclusion that the veteran has diagnosed or undiagnosed illness, or both, is called the uniform case assessment protocol. This protocol is recommended by the VA headquarter to be used in the Persian Gulf Registry medical evaluation. The protocol consists of taking a patient's history, physical examination, performing a panel of laboratory tests, and the opinion of a specialist to whom the veteran is referred.

When a diagnosed disease, meaning a disease which has a code, is not identified, I attribute the symptoms to an undiagnosed condition or undiagnosed illnesses. My studies of undiagnosed illnesses in Persian Gulf veterans evaluated by me differ from statistics presented by the VA researchers at the Annual Conference on Gulf War Illnesses in Baltimore in 1995. These researchers found that only 24 percent of the Gulf veterans with symptoms have undiagnosed illnesses, and 76 percent have diagnosed diseases.

Several months later, the VA changed their statistics and informed us that only 12 percent of the Gulf veterans with symptoms have undiagnosed illnesses, and now 88 percent have diagnosed diseases. At the same conference in 1995, I challenged this statistic based on my experience with Gulf War veterans' illnesses. I asked the presenters to describe to the audience their scientific methods used in order to support their study's health results. No such scientific methods were provided.

Instead, the presenters gave explanations and opinions in order to support their statistical numbers. I believe that these explanations and opinions cannot substitute for science. I also evaluated approximately 25 to 30 Persian Gulf veterans from outside the State of New Hampshire who had been evaluated in the Gulf Registry elsewhere. These veterans, all young, came to me for a second opinion regarding their symptoms. They also brought to me copies of their registry medical records. The physicians who evaluated these veterans reached the conclusion that all of them have diagnosed diseases and none of them have undiagnosed illnesses.

After I studied their registry records, I found no clinical or laboratory support for these diagnosed diseases. In my opinion, all these veterans have undiagnosed illnesses. Now, you will ask me why I found undiagnosed illnesses in all my Gulf veterans, whereas other physicians do not. At this time, I have only one postulation on how and why many physicians attribute these symptoms to a diagnosed disease or condition.

My postulation is that physicians take individual symptoms or a combination of symptoms and arbitrarily label them as diagnosed diseases. The case I described in my written testimony illustrate how this can be done. Joint pain in a 23-year-old Marine who was in perfect health before deployment to the Gulf is labeled as having arthritis, a disease which has a code and, therefore, is a diagnosed disease.

In conclusion, we are dealing with poorly-defined illnesses which appear to be an expression of dysfunction of the multi-organ system of the human body in young individuals whose health status before deployment to the Gulf is rated by them from very good to excellent, to perfect. To use labels of diagnosed disease on these poorly understood illnesses will only cover the tragic reality of the presence of undiagnosed illnesses in Persian Gulf veterans.

Thank you.

[The prepared statement of Dr. Gordan appears on p. 122.]

Mr. QUINN. Thank you, Doctor. Thank you both for your testimony. We will have a couple of rounds of questions, I am sure. I am going to begin and then yield to Bob.

Dr. Miller, when I read over your testimony last night, the chart in the middle of the testimony, where you have the exposures and conditions, seemed very helpful to a layperson. I want you to know that. I mean, I did not understand all of what you talked about in your oral statement, but the chart seemed helpful.

It leads me to this question. When I go home every weekend, I talk about what I did at work during the week, and I want to try this out on my kids and my wife, but I cannot talk about it the way both of you can. Sometimes, vets cannot and the general public cannot, either. So, things like gasoline fumes and you mentioned perfume, and perfume is in here, and some food odors, food you eat plus food odors, affect some people and they have a reaction. That also affects civilians.

Dr. MILLER. That is correct.

Mr. QUINN. None of whom have ever gone to the Gulf or served ever; they are older; they are younger. At some point, did you or do we separate civilians and how this affects them and somebody who was in the Gulf?

Dr. MILLER. The onset in civilians really is what we studied long before the veterans came around, and we were looking at populations—civilians who had been exposed to organophosphate pesticides and people who had been exposed in remodeling a building, some fairly large samples. In both of those groups, we saw extremely similar—I mean, just identical, mapped one-on-one—kinds of symptoms and new-onset intolerances, even down to having problems with drinking an alcoholic beverage or being around caffeine, having caffeine.

Mr. QUINN. You saw similar——

Dr. MILLER. The same symptoms——

Mr. QUINN (continuing). To Gulf War vets?

Dr. MILLER (continuing). And in the same order and the same kinds of intolerances to different exposures.

Mr. QUINN. So, that would lead you to believe—a layperson, again—that when they were at work in this building or wherever they were, that was an incident, just like it would be an incident for someone that served in the Persian Gulf?

Dr. MILLER. Correct. There are several dozen people now who used to work at the EPA headquarters building. I was a peer reviewer on their study. They continue to report multi-system symptoms and new-onset intolerances, at least new since the time the building was remodeled. We think that it does not seem to matter which set of exposures occurs. Now, this deviates from classical toxicology. Maybe it is a little bit more like allergy, in that you have an initial exposure event and then, thereafter, people are sensitive to low-level exposures.

Mr. QUINN. Right.

Dr. MILLER. But it is not an allergy, either, because allergies involve very specific antibodies that you make to specific proteins. So, if you are sensitive to bee venom, there is no reason that you should be sensitive to ragweed. So, when we are talking about this, we think the reason we are dealing with—probably the most compelling evidence that we are dealing with a new mechanism for disease comes from a multitude of countries, more than a dozen, all industrialized countries, where people have had exposures.

Mr. QUINN. Excuse me. How many of those countries had people serving in the Gulf, or doesn't it matter?

Dr. MILLER. The only one where they have really looked is here.

Mr. QUINN. Okay.

Dr. MILLER. Okay—in terms of the Gulf vets. I do not know that Canada has looked closely. U.K., I think, is seeing some of these trends, as well. But there have been sheep dippers that use organophosphates in the United Kingdom that come down with a very similar kind or set of symptoms and intolerances; radiographic technicians handling X-ray developer solutions in Australia and New Zealand; there are people that have become ill in Germany from building homes where the logs and preserved with pentachlorophenol, and they develop the same sequence of new intolerances and these multi-system symptoms, which leads a scientist to say, "Well, maybe people—" you know, you might speculate, "Well, maybe people do not like the chemical exposures and the odors." And I think people say, "Well, this is a psychological kind of response."

But when you have folks in a dozen countries who do not know each other, from different demographic groups who share only in common having some exposure event, and reporting not only being bothered by chemical exposures, but also foods, medications, alcoholic beverages, and so on, it is very compelling that there is something unique going on here.

Mr. QUINN. That was interesting to me, too. And then, last, and then I will yield to Mr. Filner, you suggest toward the end of your testimony that an unmasking study be done. I can learn the technicalities of that, but how long would something like that take, time-wise; do you have any guess?

Dr. MILLER. It would take for an individual, for a single individual, probably on the order of 2 to 5 weeks, to be in a controlled environmental unit, which is just a hospital in which you have removed the chemical exposures, and then testing them on foods one at a time.

Mr. QUINN. What if you are going to do a group of people?

Dr. MILLER. Well, we have really proposed this right now for research purposes, but I see no reason you could not have places set up where veterans could go who are sick as a treatment and diagnostic procedure, and you could do that very quickly if hospitals and doctors were taught how to do these things.

Mr. QUINN. Okay. Thank you very much. I appreciate it. Mr. Filner.

Mr. FILNER. Thank you, and I hope your full statements are read by everybody here and outside. You did not have enough time, Dr. Gordan, to get into your final page on which I think you have some rather interesting statistics. But, again, from a layman's perspective, the common thread from both of you that I get is that the very labeling or diagnosing of this cohort of people gets in the way of our understanding of what is going on.

If that is true, and I want to ask the panel back after we hear from the next panel that would lead to a VA policy in which, in fact, we do not label, as opposed to finding a diagnosis. It seems to me that there is so much question about the labeling. Dr. Gordan, I do not think you got to it in the oral statement, but you showed that this 23-year-old that you brought up could have 10 diagnosed illnesses without us really understanding what was going on. In fact, that would be such an incredible situation, as you said, it would be unprecedented in the history of medicine that that occurred.

By the way, in each of those 10, it is possible that each of those diagnoses could be determined not to be service connected; right? I mean, it is possible.

Dr. GORDAN. Possible, yes.

Mr. FILNER. So, this person would not get any compensation based on this labeling. I find that, by the way, extremely interesting, and I think the VA ought to listen to it. Each of you have made recommendations about what to do next, and if I read your statement correctly, Mr. Gordan, it goes back at least 5 years making these recommendations. How is the VA handling your recommendations? You made some here. I assume you have made some through the channels. You are a physician at the VA. What has been the VA reaction to your suggestions, either one of you?

Dr. GORDAN. I have not heard any comments or any input.

Mr. FILNER. You have sent letters——

Dr. GORDAN. No.

Mr. FILNER (continuing). Made statements?

Dr. GORDAN. No. I just made this recommendation verbally, actually at one conference.

Mr. FILNER. Over how many years have you done that?

Dr. GORDAN. Since 1995.

Mr. FILNER. Since 1995. Dr. Miller?

Dr. MILLER. I served as a consultant at the VA in Houston and presented this to the staff there and talked to them about it. In fact, the local VA there wanted to talk to the national VA—did talk to them about setting up a controlled environmental unit. It just did not ever—it never would happen. The other thing——

Mr. FILNER. That is the second question I am going to ask you. Why are such suggestions—because I have heard from numerous people within and without the VA system that suggestions from well-credentialed, well-qualified people are ignored, nobody says anything about, nobody reacts to.

Dr. MILLER. The same suggestions and kind of testimony I gave here today, but in much greater length, I have done for the Persian Gulf Expert Advisory Committee that the VA has, which I have served on for 4 years. So, these are not new ideas to the people on that committee. I think the difficulty is that there are certain barriers within the medical community to looking at a different paradigm for illness. I think that is a very hard thing for people to understand. We are dealing with a mechanism that does not fit what we understand from toxicology or from allergy, or any other area.

Mr. FILNER. You may not be right, as any other physician who has come to me or researcher that has come to me with various theories, all of which they believe have been documented in their studies. But we are close to a decade where we do not have an answer. I have to say to the VA, you have got to try something new. You are going by the same—I will use the word "paradigm" that Doctor Miller used—we are going by the same way of approaching things as we have in the past and it is not working. Try something new.

If Dr. Miller says, "Try the unmasking study," if Dr. Gordan says, "Do not label," or "Use another paradigm," if Dr. Nicholson out in Irvine says, "We have a mycoplasma situation," if someone else says, "It is depleted uranium,"—PB was just a subject of the study—all of these seem to be reasonable fields of study, rather than not doing anything.

You know, Joe will come back and say, "Oh, we are doing something." I mean, 7 or 8 years late and not with enough intensity and not with enough funds, perhaps; and if there are funds you need, just like the legal advice, I said before to tell us what you need to do the job. But your testimony seems to tell me, one, that there are lots of promising avenues. There are some dead ends about labeling that come from my anecdotal experience, and that nobody is listening to you. I mean, do you have a reaction to that?

Dr. MILLER. I want to, first of all, acknowledge that anyone in this area can be wrong, but, as you are saying, there are some hypotheses that need to be tested. There are concrete ways of testing the hypotheses that we have laid out here. In fact, there have been four federally-sponsored meetings, sponsored by EPA, NIH, and other federal environmental agencies, to look at this question of chemical intolerance and how would you test it.

One of the papers I gave you all is on empirical approaches to testing this question, and it is a consensus document representing many different people, EPA, universities, and so on, as to how you would do this using an environmental medical unit. So, this is believed to be the way to test this question, and that is all I advocate is testing the question.

Mr. FILNER. Did you leave out by accident, or is DOD and VA not involved in any of this stuff, the very agencies that ought to be most heavily interested in getting an answer?

Dr. MILLER. This is a long story. Your committee, your main committee, House Veterans' Affairs Committee, several years ago had me testify. I presented much of the same information. The committee recommended that an environmental unit be constructed. NIEHS has been interested in supporting research in such a facility.

Mr. FILNER. Environmental unit—I'm sorry—where?

Dr. MILLER. An environmental medical unit for testing this question.

Mr. FILNER. Where? I mean, in what agency?

Dr. MILLER. Anywhere.

Mr. FILNER. Oh. Okay.

Dr. MILLER. Anywhere. The environmental medical unit idea then was advanced—I think there was a $1.2 million recommendation for having such a unit established. It was a bipartisan measure from people on your committee. I believe Mr. Stump was involved in that. It went forward to Appropriations, who I believe only appropriated about one-fourth of the amount necessary. Then the committee, your committee, again came back and asked that DOD or VA come up with the additional funding.

The DOD agreed to do that, and they issued a call for proposals. The proposal that was sent out, it did not quite reflect what was meant by the committee.

Mr. QUINN. That is something new. (Laughter.)

Dr. MILLER. Various people responded to the call for proposals and a peer-review committee met, and they funded something that was not at all an environmental medical unit. If I recall right, it was something to do with an animal study and it was for maybe, again, one-quarter of the amount that was allocated. So, it never happened.

Veterans have asked me about this a multitude of times, and I have to explain that the intent of Congress was to have this happen, but it still has not occurred.

Mr. QUINN. Thank you, Dr. Miller and Dr. Gordan.

Mr. Reyes, questions for the panel?

Mr. REYES. Thank you, Mr. Chairman. Dr. Miller, thank you for your work in this area. In your testimony, you indicated that some of the veterans that you have examined have acquired new intolerances for some of the chemicals and odors and things of that type, which is similar to others that have noted the same kinds of symptoms across the country.

Are you aware whether or not the VA, in its examination of our veterans, ask our veterans if, in fact, they are experiencing these intolerances as a general policy?

Dr. MILLER. You would have to ask the VA right now what they are asking doctors to do, but the most recent things that I knew about—and our committee has not met for more than a year—okay. The most recent things that I knew about—most doctors are unaware, completely unaware of even asking questions about chemicals, foods, medications, alcohol, and caffeine.

In fact, if you were to ask somebody—if a veteran came to you and said, "I cannot drink beer anymore," most doctors would say, "Well, that is good, you know. Stop drinking." They would not take it as a clue that maybe there was an exposure there, that now people had lost tolerance. At the same time, if a veteran came in and were saying they were spacey or dizzy or had trouble concentrating, they may not talk about the specifics of it. It is when they are out driving in a car and they get lost and confused. Yet if you talk to veterans on an individual basis, that is exactly what the story is that you will find.

The VA has very few physicians who are trained, like Dr. Murphy is and some others, to do the kinds of environmental evaluations that need to be done here. They do not ask about a detailed exposure history, trying to look at when symptoms began and whether particular exposures now trigger those symptoms. When I have seen a veteran, as a consultant to the VA in Houston, typically I will take 4 or 5 hours with each veteran that I see.

There are questionnaires available, in fact, that have very good reliability, validity, sensitivity, and specificity. I have given you one in a paper that was just published about that kind of questionnaire, which certainly could be used by any physician to get a hold on this problem, because the questions are not the usual ones we ask in a medical history, but they are key to teasing out this problem.

Eight-eight percent of the veterans that we have seen at the referral center in Houston had intolerances in one or more of those categories that I specified. So, it is the vast majority, and these were not selected veterans. These were the first consecutive 59 that came through that referral center, and I know Dr. Gordan has had a number of experiences also with this, and some of the veterans that I saw had been referred down from his center.

Mr. REYES. Dr. Gordan, do you wish to comment on that?

Dr. GORDAN. I think one of the very strong hypotheses in dealing with those so-called undiagnosed or ill-understood illnesses is chemical sensitivities. There are so many striking aspects. I talk with the veterans. I cannot understand these symptoms and they are absolutely unprecedented in our medical training. Many times I hear, "Well, I went to the gas station. I tank up my car and I drove, and I know when I left the gas station and I reach some town, but I have no idea how I got to that town, why, and what I am doing there."

So, these kinds of things I hear relatively frequently from the veterans. So, this raises the possibility that chemical sensitivity, or whatever we like to call it, might play a major role in our veterans' illnesses.

Mr. QUINN. Thank you, Mr. Reyes. Mr. Rodriguez.

Mr. RODRIGUEZ. I know, Dr. Miller, you talked a little bit—and I know that my predecessor, Congressman Tejeda, who had served in Vietnam and had, I know, pushed—was that called the environmental medical center or——

Dr. MILLER. Environmental medical unit.

Mr. RODRIGUEZ. What was going to be the purpose of that?

Dr. MILLER. It was to provide a facility for testing veterans for intolerances to chemicals, foods, drugs, and it would allow you to get them to a clean baseline. If they are out in the community, exposed to diesel exhaust and to typical exposures inside a building, low-level volatile organic chemicals or routinely using certain products, they may be exposed if they are sensitive to foods or exposed to things and they cannot tell what is causing it. So, this is a way of getting them away from those exposures long enough that they start to feel better, and then you can go back and test them for one thing at a time.

Mr. RODRIGUEZ. So, you are telling me that that was pushed about 4 or 5 years ago. Is that being done anywhere right now?

Dr. MILLER. No, it is not, for the reasons I mentioned.

Mr. RODRIGUEZ. Okay.

Dr. MILLER. It just did not go through.

Mr. RODRIGUEZ. My God. Let me ask you—previously, also, we talked a little bit about the review of the literature and looking at the studies out there. I know that, depending on who is doing the review of the literature, the frame of reference that that individual comes from, or that group, has a bearing in terms of the results of the review of the literature.

I was wondering how you felt in terms of—I know you mentioned the need for additional studies and what you called unmasking. I do not know if you want to make any more comments in that area, but we had inquired in terms of whether there is a need for more research. You are apparently saying, "Yes, there is," and I was wondering if you want to make some comments in that area.

Dr. MILLER. The Institute of Medicine is reviewing hypotheses. The Rand report reviewed hypotheses. Actually, this most recent Rand report, which I was asked to comment on, includes this toxicant-induced loss of tolerance hypothesis, and it says we do not have sufficient information to rule that out. That is as far as they go on anything, and that more work would be needed in this area, but I do not see any recommendations that are really making that take place.

I think one of the obstacles is that it is an expensive proposition. You have to set up a special facility. You have to have the people who are trained to do this. It does require a special effort. Most VA funding and DOD grants and NIH grants would be for maybe a few hundred thousand dollars. This would be a little bit more expensive than that and would require continued funding over a period of time.

We have estimated that if you had no external funding at all, it would take probably, you know, $4 million to $6 million per year for several years till you get the pilot data, till you have evaluated enough patients, and then you can say, "Yes, this does work for diagnosis and treatment." It would be both diagnosis and treatment. So, it is a substantial investment to make it happen. While NIEHS has been interested in this, they cannot construct facilities. It is not under their mandate. Other NIH institutes can, but they cannot. So, this is why your committee had said, "Well, maybe we can get the unit established for $1.2 million and find some other people, like NIH, who might fund the studies in the unit." So, it was a way of trying to pull together the funds to make it happen.

Mr. RODRIGUEZ. You are saying that the legislation did pass and everything, but the bottom line is that DOD decided to put it out for bids and funded something else.

Dr. MILLER. Appropriations cut the amount, and then your committee requested the additional funds, which DOD agreed to supply. When they put out their call for proposals, the call did not reflect exactly what you had asked for and the proposals that came in did not reflect it exactly. By the time the peer-review committee finished, what was funded did not look at all like an environmental unit.

Mr. RODRIGUEZ. It was an animal study?

Dr. MILLER. I believe it was an animal study—I do not want to be quoted on that—and it was for a few hundred thousand dollars, as I recall.

Mr. RODRIGUEZ. Thank you.

Mr. QUINN. Thank you, Mr. Rodriguez. Thank you both for your testimony today. We are going to move on to our next panel, but just for the record, I have asked staff here for the subcommittee and the full committee, for that matter, to get some legislative research done on the outline of that route to the unmasking study. I think that may be some of the best money we could spend at this point.

I mean, again, I am not a medical person; but from what you have told me and what I have read, that seems to make some sense. I understand what you say when the Rand study did not rule it out. It seems everybody does not rule out anything. It is just they do not rule in anything, either.

So, for the members here today, staff is going to begin on just a brief history for us, tracing that through the money, what we did, what Appropriations did not do. That will be helpful to us.

Mr. FILNER. Mr. Chairman, just for the record, I would like to introduce the piece of information that Dr. Miller referred to, the Quick Environmental Exposure and Sensitivity Inventory, QEESI, this environmental questionnaire I would like to introduce in the record.

Mr. QUINN. Without objection.

(The information follows:)

QEESI ©

This questionnaire is designed to facilitate history-taking from individuals who report chemical intolerances. It is not designed to diagnose chemical sensitivity, but rather to help characterize patients along the dimensions most frequently reported as being associated with this health problem. The questionnaire contains four scales: Symptom Severity (scored 0-100), Chemical Intolerances (0-100), Other Intolerances (0-100), and Life Impact (0-100). In addition, it contains a Masking Index (0-10) that offers some assessment of ongoing exposures that may affect individuals' awareness of their intolerances and the intensity of their responses to environmental exposures.

Potential uses of the QEESI © include:

(1) In research studies, to facilitate characterization and cross-comparison of study populations.

(2) In clinical settings, to obtain a profile of patients' self-reported symptoms and intolerances. In certain cases, health professionals may wish to have patients complete a QEESI © at intervals in order to follow the course of their patients' symptoms and intolerances over time or in response to an intervention.

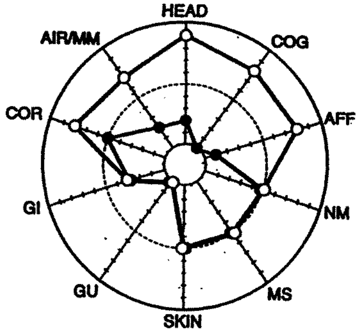
(3) In other settings, to provide individuals who report new intolerances with a questionnaire that they can fill out and then discuss with their personal physicians.

For persons who report that their symptoms began or became worse following a particular exposure, such as to pesticides or indoor air contaminants, the QEESI ©'s four scales may be completed once in one color of ink, in order to show self-reported responses before the event, and a second time in another color to show responses since the event. A special feature of the QEESI © is the "Symptom Star" which provides a visual representation of patients' responses on the Symptom Severity scale. The Symptom Star can also be completed for both pre- and post-exposure symptoms as shown here.

For additional copies of the QEESI ©, contact Claudia S. Miller, M.D., M.S., University of Texas Health Science Center at San Antonio, Department of Family Practice, Suite 610-L, 7703 Floyd Curl Drive, San Antonio, Texas 78284-7794. Phone: (210) 567-7760 and Fax: (210) 567-7764. For further information see Chemical Exposures: Low Levels and High Stakes by Nicholas A. Ashford and Claudia S. Miller, John Wiley & Sons, 1998. To order call 1-800-225-5945.

HEAD = Head-related symptoms
COG = Cognitive symptoms
AFF = Affective Symptoms
NM = Neuromuscular symptoms
MS = Musculoskeletal symptoms
SKIN = Skin-related symptoms
GU = Genitourinary symptoms
GI = Gastrointestinal symptoms
COR = Heart/chest-related symptoms
AIR/MM = Airway or mucous membrane-related symptoms

●—● Before exposure event
○—○ Since exposure event

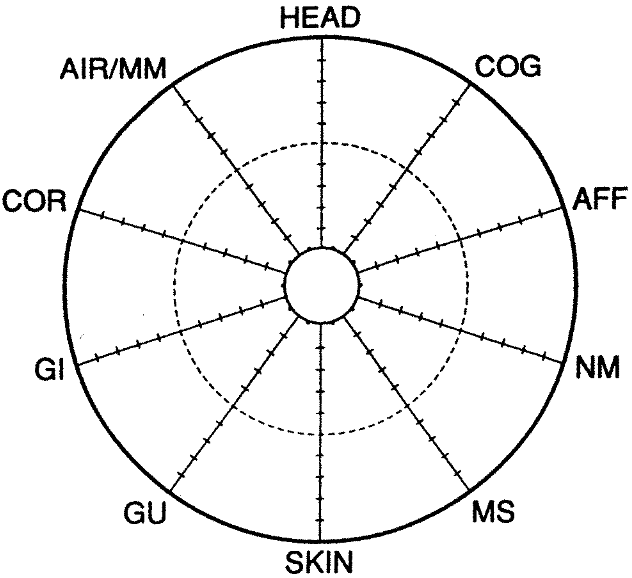


QUICK ENVIRONMENTAL EXPOSURE AND SENSITIVITY INVENTORY V-1

(QEESI)©

The purpose of this questionnaire is to help identify health problems you may be having and to understand your responses to various exposures. If your health problems began suddenly or became much worse after a particular exposure event, such as a pesticide exposure or moving to a new home or office building, complete pages 1-3 describing how you are now, then go back through these same questions a second time, and identify how you were before the exposure event. After you have completed all of the items on pages 1-5, fill in the "target" diagram below.

SYMPTOM STAR



Instructions: After completing pages 1 through 5, unfold page 3 so that it lies just to the right of this page. Place a small dot on the corresponding spoke for each symptom item on page 3. Connect these points, For "before and after " scores (described above), use two different colors.

CHEMICAL EXPOSURES

The following items ask about your responses to various odors or chemical exposures. Please indicate whether or not these odors or exposures would make you feel sick, for example, you would get a headache, have difficulty thinking, feel weak, have trouble breathing, get an upset stomach, feel dizzy, or something like that. For any exposure that makes you feel sick, on a 0-10 scale rate the severity of your symptoms with that exposure. For exposures that do not bother you, answer "0." Do not leave any items blank.

0 = not at all a problem
5 = moderate symptoms
10 = disabling symptoms

For each item, circle one number only:

1. Diesel or gas engine exhaust	0 1 2 3 4 5 6 7 8 9 10
2. Tobacco smoke	0 1 2 3 4 5 6 7 8 9 10
3. Insecticide	0 1 2 3 4 5 6 7 8 9 10
4. Gasoline, for example at a service station while filling the gas tank	0 1 2 3 4 5 6 7 8 9 10
5. Paint or paint thinner	0 1 2 3 4 5 6 7 8 9 10
6. Cleaning products such as disinfectants, bleach, bathroom cleansers or floor cleaners	0 1 2 3 4 5 6 7 8 9 10
7. Certain perfumes, air fresheners or other fragrances	0 1 2 3 4 5 6 7 8 9 10
8. Fresh tar or asphalt	0 1 2 3 4 5 6 7 8 9 10
9. Nailpolish, nailpolish remover, or hairspray	0 1 2 3 4 5 6 7 8 9 10
10. New furnishings such as new carpeting, a new soft plastic shower curtain or the interior of a new car	0 1 2 3 4 5 6 7 8 9 10

Total Chemical Intolerance Score (0-100): ☐

Name any additional chemical exposures that make you feel ill and score them from 0 to 10:______________________________

____

____

____

____

OTHER EXPOSURES

The following items ask about your responses to a variety of other exposures. As before, please indicate whether these exposures would make you feel sick. Rate the severity of your symptoms on a 0-10 scale. Do not leave any items blank.

0 = not at all a problem
5 = moderate symptoms
10 = disabling symptoms

For each item, circle one number only:

1. Chlorinated tap water	0 1 2 3 4 5 6 7 8 9 10
2. Particular foods, such as candy, pizza, milk, fatty foods, meats, barbecue, onions, garlic, spicy foods, or food additives such as MSG	0 1 2 3 4 5 6 7 8 9 10
3. Unusual cravings, or eating any foods as though you were addicted to them; or feeling ill if you miss a meal	0 1 2 3 4 5 6 7 8 9 10
4. Feeling ill after meals	0 1 2 3 4 5 6 7 8 9 10
5. Caffeine, such as coffee, tea, Snapple, cola drinks, Big Red, Dr. Pepper or Mountain Dew, or chocolate	0 1 2 3 4 5 6 7 8 9 10
6. Feeling ill if you drink or eat less than your usual amount of coffee, tea, caffeinated soda or chocolate, or miss it altogether	0 1 2 3 4 5 6 7 8 9 10
7. Alcoholic beverages in small amounts such as one beer or a glass of wine	0 1 2 3 4 5 6 7 8 9 10
8. Fabrics, metal jewelry, creams, cosmetics, or other items that touch your skin	0 1 2 3 4 5 6 7 8 9 10
9. Being unable to tolerate or having adverse or allergic reactions to any drugs or medications (such as antibiotics, anesthetics, pain relievers, x-ray contrast dye, vaccines or birth control pills), or to an implant, prosthesis, contraceptive chemical or device, or other medical, surgical or dental material or procedure	0 1 2 3 4 5 6 7 8 9 10
10. Problems with any classical allergic reactions (asthma, nasal symptoms, hives, anaphylaxis or eczema) when exposed to allergens such as: tree, grass or weed pollen, dust, mold, animal dander, insect stings or particular foods	0 1 2 3 4 5 6 7 8 9 10

Total Other Intolerance Score (0-100): ☐

SYMPTOMS

The following questions ask about symptoms you may have experienced commonly. Rate the severity of your symptoms on a 0-10 scale. Do not leave any items blank.

0 = not at all a problem
5 = moderate symptoms
10 = disabling symptoms

For each item, circle one number only:

1	Problems with your muscles or joints, such as pain, aching, cramping, stiffness or weakness?	MS 0 1 2 3 4 5 6 7 8 9 10
2	Problems with burning or irritation of your eyes, or problems with your airway or breathing, such as feeling short of breath, coughing, or having a lot of mucus, post-nasal drainage, or respiratory infections?	AIR/MM 0 1 2 3 4 5 6 7 8 9 10
3	Problems with your heart or chest, such as a fast or irregular heart rate, skipped beats, your heart pounding, or chest discomfort?	COR 0 1 2 3 4 5 6 7 8 9 10
4	Problems with your stomach or digestive tract, such as abdominal pain or cramping, abdominal swelling or bloating, nausea, diarrhea, or constipation?	GI 0 1 2 3 4 5 6 7 8 9 10
5	Problems with your ability to think, such as difficulty concentrating or remembering things, feeling spacey, or having trouble making decisions?	COG 0 1 2 3 4 5 6 7 8 9 10
6.	Problems with your mood, such as feeling tense or nervous, irritable, depressed, having spells of crying or rage, or loss of motivation to do things that used to interest you?	AFF 0 1 2 3 4 5 6 7 8 9 10
7.	Problems with balance or coordination, with numbness or tingling in your extremities, or with focusing your eyes?	NM 0 1 2 3 4 5 6 7 8 9 10
8.	Problems with your head, such as headaches or a feeling of pressure or fullness in your face or head?	HEAD 0 1 2 3 4 5 6 7 8 9 10
9.	Problems with your skin, such as a rash, hives or dry skin?	SKIN 0 1 2 3 4 5 6 7 8 9 10
10.	Problems with your urinary tract or genitals, such as pelvic pain or frequent or urgent urination? (For women: or discomfort or other problems with your menstrual period?)	GU 0 1 2 3 4 5 6 7 8 9 10

Total Symptom Score (0-100): ☐

MASKING INDEX

The following items refer to ongoing exposures you may be having. Circle "0" if the answer is NO, or if you don't know whether you have the exposure. Circle "1" if the answer is YES, you do have the exposure. Do not leave any items blank.

Circle "0" or "1" only:

1. Do you smoke or dip tobacco once a week or more often?	NO=0 YES=1
2. Do you drink any alcoholic beverages, beer, or wine once a week or more often?	NO=0 YES=1
3. Do you consume any caffeinated beverages once a week or more often?	NO=0 YES=1
4. Do you routinely (once a week or more) use perfume, hairspray, or other scented personal care products?	NO=0 YES=1
5. Has either your home or your workplace been sprayed for insects or fumigated in the past year?	NO=0 YES=1
6. In your current job or hobby, are you routinely (once a week or more) exposed to any chemicals, smoke or fumes?	NO=0 YES=1
7. Other than yourself, does anyone routinely smoke inside your home?	NO=0 YES=1
8. Is either a gas or propane stove used for cooking in your home?	NO=0 YES=1
9. Is a scented fabric softener (liquid or dryer sheet) routinely used in laundering your clothes or bedding?	NO=0 YES=1
10. Do you routinely (once a week or more) take any of the following: steroid pills, such as prednisone; pain medications requiring a prescription; medications for depression, anxiety, or mood disorders; medications for sleep; or recreational or street drugs?	NO=0 YES=1

Masking Index (0-10):
(Total number of YES answers) ☐

IMPACT OF SENSITIVITIES

If you are sensitive to certain chemicals or foods, on a scale of 0-10 rate the degree to which your sensitivities have affected various aspects of your life. If you are not sensitive or if your sensitivities do not affect these aspects of your life, answer "0." Do not leave any items blank.

0 = not at all
5 = moderately
10 = severely

How much have your sensitivities affected:

1. Your diet	0 1 2 3 4 5 6 7 8 9 10
2. Your ability to work or go to school	0 1 2 3 4 5 6 7 8 9 10
3. How you furnish your home	0 1 2 3 4 5 6 7 8 9 10
4. Your choice of clothing	0 1 2 3 4 5 6 7 8 9 10
5. Your ability to travel to other cities or drive a car	0 1 2 3 4 5 6 7 8 9 10
6. Your choice of personal care products, such as deodorants or makeup	0 1 2 3 4 5 6 7 8 9 10
7. Your ability to be around others and enjoy social activities, for example, going to meetings, church, restaurants, etc.	0 1 2 3 4 5 6 7 8 9 10
8. Your choice of hobbies or recreation	0 1 2 3 4 5 6 7 8 9 10
9. Your relationship with your spouse or family	0 1 2 3 4 5 6 7 8 9 10
10. Your ability to clean your home, iron, mow the lawn, or perform other routine chores	0 1 2 3 4 5 6 7 8 9 10

Total Life Impact Score (0-100): ☐

For additional copies of the **QEESI**, call 210-567-7760. For more information about this questionnaire, refer to Chemical Exposures: Low Levels and High Stakes (2nd Edition) by Nicholas A. Ashford and Claudia S. Miller, John Wiley & Sons, Inc., 1998. To order, call toll-free 1-800-225-5945.

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Mr. FILNER. Also, since we may not have time to get back to the first panel, Dr. Gordan, at the end of his statement, which he did not read here today, said that before we passed that famous law that I just kept referring to, Public Law 103–446, he says that the most common reason for claim denials for Gulf War veterans was that the veteran had an undiagnosed illness. After we passed the law, which even you had some trouble with, the most common reason for claim denial was that they had a diagnosed illness. I would like to know the facts of that and why that has occurred.

I think, as Dr. Gordan is more than implying, we are working to avoid claims, as opposed to working to try to get our veterans who are disabled some benefits.

Thank you.

Dr. MILLER. Could I make just one statement——

Mr. QUINN. Of course, you may.

Dr. MILLER (continuing). About the diagnosed versus undiagnosed?

Mr. QUINN. Sure.

Dr. MILLER. In medicine, we will label something with a name, as you are aware, and call it a diagnosis, but it may not convey what the etiology is. There are very few places in medicine where we say what the etiology is when we give a diagnosis. One of the few is in infectious diseases. One would say it is pneumococcal pneumonia or, you know, HIV, because we are identifying an organism.

But with things like asthma, depression, chronic fatigue, and so on, we are not specifying an etiology. So, what some doctors call a diagnosis and what you mean by a diagnosis in terms of etiology are quite different.

Mr. FILNER. I think every profession, even our profession, labels rather than tries to provide meaning for as the answer. What we have to get at is the true answer here. As I said earlier, the common thread of yours is that if the labeling is getting in our way of understanding, then the VA ought to have a policy which does not do that, at least at some level, to begin to get at the reality of this illness.

Thank you.

Mr. QUINN. Thank you, both, and we are going to call our third panel forward now.

[Pause.]

Mr. FILNER (presiding). We thank you for your patience in staying with us and your willingness to testify. The Chairman will be right back. I think he was suffering from an undiagnosed illness that shall not be labeled. (Laughter.)

Mr. FILNER. We have representatives from the American Legion, Disabled American Veterans, National Gulf War Resource Center, Veterans of Foreign Wars, and the Vietnam Veterans of America. I would just call you in the order that the agenda lays out.

Mr. Matthew Puglisi, representing the American Legion?

STATEMENT OF MATTHEW L. PUGLISI, ASSISTANT DIRECTOR, NATIONAL VETERANS' AFFAIRS AND REHABILITATION COMMISSION, THE AMERICAN LEGION

Mr. PUGLISI. Thank you, Mr. Filner. Good morning—almost good afternoon—to the other members of the subcommittee. The American Legion appreciates the opportunity to offer testimony regarding Gulf War veterans issues, particularly the adjudication of Persian Gulf undiagnosed illness claims by the Department of Veterans Affairs.

The Chairman's leadership and also the leadership displayed by Mr. Filner and other members of this subcommittee on this issue of Gulf War undiagnosed illness claims in 1997 led directly to a significant decrease in the backlog of those claims. Your continued concern and oversight of this process has kept the pressure on VA to adjudicate these claims as well as possible.

It appears that this morning there may have been a bit of a breakthrough, not only by having the hearing, but led by Mr. Filner's questioning regarding the weakness and the regulations that were written for VA. In our judgment and in the judgement of the Chairman of the Veterans' Affairs Committee, a solution through rewriting the legislation or perhaps amending the legislation may be the solution that we need to get many of these disabled veterans the disability compensation that they rate.

Mr. Thompson this morning rightly pointed out that the numbers of undiagnosed illness claims filed by Gulf War veterans is relatively small when you compare it to the universe of claims that VA adjudicates every year or the number of Persian Gulf War or Conflict claims that have been filed. But behind every one of those numbers, even though they may number in the thousands rather than the hundreds of thousands, is a veteran, and behind every one of those veterans, there is a family.

When that veteran is denied, and as is made clear by the staff report prepared by the minority, the veterans are denied at a greater rate than those who file a regular claim. That is a disabled war veteran who is going without compensation and, as has been pointed out earlier in testimony, without any treatment, as well. We just do not understand why these veterans are sick. We cannot treat them. The least that should be done is to compensate them.

As has been pointed out in testimony this morning and through questioning, the intent of Congress was not met and is not implemented by the regulation, and that is why these veterans have failed to receive the compensation that they deserve from VA.

I would like to talk a little bit about what we know about these illnesses being suffered by Gulf War veterans. A great many studies have been done to date, as has been pointed out earlier, many epidemiological studies trying to understand the symptoms that these veterans report. And, as has been made clear in earlier testimony and in a great deal of scientific research, many of the symptoms that Gulf War veterans report overlap with conditions known as chronic fatigue syndrome, fibromyalgia, and, as pointed out by Dr. Miller earlier, multiple-chemical sensitivity.

There is a growing body of evidence found in the medical literature which suggests that the symptoms of chronic fatigue syndrome, fibromyalgia, and some other illnesses so overlap with each other that these illnesses are sometimes indistinguishable to physicians. Because these diagnoses that physicians arrive at only by excluding other diseases, it would be reasonable to assume that these Gulf War veterans may have illnesses that a physician may diagnose.

Now, these veterans without a diagnosis are going to be compensated by VA. That has been pointed out. But, as the literature makes clear, a physician could reasonably diagnose these veterans with chronic fatigue syndrome, fibromyalgia, or some other hard-to-diagnose or hard-to-define illness, but yet these veterans would go without compensation, as has been made clear.

Last week, as has been mentioned, a report was released by the Rand Corporation regarding pyridostigmine bromide. Now, pyridostigmine bromide has undergone a great deal of scrutiny and still remains a plausible risk factor to explain Gulf War veterans' illnesses. Investigators have found in animal and human research that some chemicals, in combination with pyridostigmine bromide, can cause subtle nerve damage in animals and perhaps humans, and the impact on an exposed person's health would be subtle and would not likely be measured in most diagnostic tests.

The symptoms can include fatigue, headaches, and joint and muscle pain, to name several. Now, physicians examining these patients may or may not diagnose them with some illness, and the symptoms exhibited by these patients, as was pointed out earlier, overlap with some diagnosable illnesses. It is the failure of the VA's regulations to implement Congress' intent in the law passed in the 103rd Congress that has enabled thousands of Gulf War veterans to slip through the cracks, not to be diagnosed with their service-connected conditions or not to be service-connected for their disability and not to receive compensation.

In closing, the American Legion encourages the subcommittee to exploit the breakthrough that may have occurred this morning, work directly with VA, amend or change the law to ensure that VA can write regulations that capture these veterans that slip through the cracks, service-connect them for the disabilities, and allow them to receive the compensation that they deserve.

Mr. Chairman, that concludes my statement and I am open to answer any questions.

[The prepared statement of Mr. Puglisi appears on p. 125.]

Mr. QUINN (presiding). Thank you, Mr. Puglisi. Ms. Ilem, you are next, I believe.

STATEMENT OF JOY J. ILEM, ASSOCIATE NATIONAL LEGISLATIVE DIRECTOR, DISABLED AMERICAN VETERANS

Ms. ILEM. Thank you. I appreciate the opportunity to appear before you today and present the views of the Disabled American veterans regarding VA management of Persian Gulf veterans in terms of treatment and claims processing for undiagnosed illnesses. As an organization dedicated to the welfare of our Nation's disabled veterans, DAV is particularly concerned about the plight of Persian Gulf veterans suffering from unexplained illnesses.

The DAV believes Persian Gulf veterans are significantly disadvantaged in the VA health care and benefits system because of the standard medical practice of providing an diagnosis even in the case of an ill-defined health problem and because of VA's narrowly-defined regulation for compensation for disabilities due to undiagnosed illnesses.

Veterans' representatives complain that physicians, striving to adhere to the standard medical practice, commonly offer a diagnosis characterized as a best possible assessment even in the cases of ill-defined health problems. Because the VA regulation limits compensation to undiagnosed illnesses, these questionable, perhaps speculative, diagnoses defeat veterans' claims for compensation.

It appears there is a very fine line between symptom complexes that result in a diagnostic label and those that do not, perhaps due to the poorly understood nature of the unexplained health problems associated with Gulf War Syndrome. Only when a physician acknowledges his or her uncertainty regarding an ill-defined health problem does a Persian Gulf veteran have a fair chance of being properly compensated for undiagnosed illnesses under the narrowly-defined VA provision.

The physician's medical expertise and opinion greatly impact the outcome of veterans' claims for compensation in the VA system. When physicians are better informed about the claims process, they may be more likely to acknowledge an ill-defined health problem in a case where they are not absolutely certain of a diagnosis. We would add that it is not expected that physicians tailor their medical judgment based on the claims process. However, it is in the best interest of veterans that physicians have a basic understanding of the regulations that govern the process when making medical determinations for Persian Gulf veteran suffering from symptoms commonly associated with Gulf War Syndrome.

Advocates also complain that two Persian Gulf veterans suffering from similarly ill-defined health problems may find themselves treated very differently by the VA health care and benefits system of the VA. A designated case manager, who evaluates all the medical evidence relating to a Gulf War veteran's symptoms, is likely to provide a very different evaluation report from that provided for a veteran who is evaluated by several different physicians with no single case manager to review the evidence.

A thorough and comprehensive assessment of all medical evidence by a single case manager not only is crucial to treatment and management of the Persian Gulf veteran's illness, but also to the veteran's ability to be properly compensated by VA. DAV is concerned that many Persian Gulf veterans have been denied or granted service connection for their poorly-defined illnesses based solely on whether their illnesses were or were not diagnosed.

To date, only a little over 3,000 claims for undiagnosed illness have been reported as approved under the VA regulation, with just over 8,000 claims denied. It does not appear that VA has successfully tailored its health care and benefits system to meet the unique needs of Persian Gulf veterans as it continues to handle these cases using a fairly traditional approach.

Typically, a veteran's claim for compensation is approved after a diagnosis is rendered and a nexus between that disability and service is established. In contrast, a Persian Gulf veteran's claim for undiagnosed illness hinges on a lack of a diagnosis being rendered. If, at any point during adjudication of the claim a diagnosis is reported in the medical records for the symptoms in question, the undiagnosed illness claim, is subsequently denied.

This dilemma, created in part by the narrowly-defined VA regulation for undiagnosed illness, is thoroughly discussed in the June, 1998 letter from House Veterans' Affairs Committee Chairman Bob Stump to VA Secretary West. Chairman Stump indicated that Congress' intent was to service-connect Persian Gulf veterans who suffer from symptoms of illness which cannot be clearly defined. However, the narrowly-defined regulation rules out service connection in any case in which a VA physician happens to assign a diagnostic label associated with an ill-defined illness. He urged the VA Secretary to examine the department's regulations for disabilities due to undiagnosed illnesses with a focus on the intent of Congress in Public Law 106–446 to ensure Persian Gulf veterans are fairly and properly compensated. We emphatically agree with that recommendation.

The DAV has serious concerns about VA's management of Persian Gulf veterans' claims and treatment for undiagnosed illnesses. Without a change to the current regulation and to VA's policy in handling Persian Gulf veterans' cases for undiagnosed illnesses, these veterans will unjustly continue to experience denial of their claims and inappropriate management of their ill-defined health problems.

Mr. Chairman, that concludes my statement, and I would be happy to answer any questions that you have.

[The prepared statement of Ms. Ilem appears on p. 132.]

Mr. QUINN. Thank you, Joy. Thanks very much. We are going to save our questions until the whole panel is done. Mr. Sullivan?

STATEMENT OF PAUL SULLIVAN, EXECUTIVE DIRECTOR, NATIONAL GULF WAR RESOURCE CENTER

Mr. SULLIVAN. Chairman, members of the subcommittee, on behalf of the 60 organizations represented by the National Gulf War Resource Center, I appreciate the opportunity to testify again regarding Department of Veterans Affairs benefits available to Gulf War veterans.

In the audience with me is Charles Sheehan-Miles, our national secretary, who testified before this panel in 1996. I have shortened my comments and ask that my full testimony be entered.

Mr. QUINN. Without objection. We appreciate your brevity.

Mr. SULLIVAN. Thank you, sir. Also, some of the numbers cited here were updated last night as a result of the Department of Veterans Affairs providing the Resource Center with new information. The work of this subcommittee remains critical. The National Gulf War Resource Center notes with concern that more than 43 percent of Gulf War veterans eligible for VA benefits are seeking health care, an unusually high percentage given the excellent health we enjoyed in 1990. In addition, almost one-third of us are ill enough to seek compensation. The NGWRG believes this is an alarmingly high rate.

Here are two other highly distrusting statistics. First, 72 percent of the claims for undiagnosed illnesses were denied [at the regional office level]; and, second, 72 percent of the claims for undiagnosed illnesses to reach the Board of Veterans Appeals were either granted or remanded. These figures show a very serious error rate at the regional office level. Congress did not intend these results, and the Resource Center finds these statistics unacceptable.

As a result of these findings, the National Gulf War Resource Center asks Congress to ask the VA to readjudicate every undiagnosed illness claim that was denied in whole or in part because sometimes there is more than one issue. Plus, we ask Congress to pass legislation allowing an open-ended presumption period for undiagnosed illness benefits, due to expire in the year 2001, and until such time as Public Law 105–277 is fully implemented.

Here are some other statistics. For all Gulf War veteran claims, Desert Storm veterans are 24 percent more likely to be denied when compared to those who served at the same time, but not in the conflict. Those in the conflict are 54 percent more likely to receive VA compensation than those who did not deploy, a clear indication that there is a problem that Congress needs to address.

The Resource Center agrees with Chairman Bob Stump's letter to VA Secretary Togo West in June of 1998. The VA must adopt more uniform standards to adjudicate Gulf War claims, with the clear note that the VA must find when there is reasonable doubt in favor of the veteran. We also want to thank VA Under Secretary of Benefits Joe Thompson and his staff for inviting the Resource Center to participate in his quarterly briefings on benefits and for providing us with the information we ask.

In fairness, the denial rate of undiagnosed illnesses has decreased from 96 percent down to 72 percent. There is some improvement. We want to recognize that, but there is still a long way to go. Instead of focusing a lot on what we see as the problem, I would like to focus on two proposals by the Resource Center that we would like to ask Congress.

There are three players in every claim, the veteran, the veteran's advocate, and the VA, and everyone should be as trained or as informed as possible in order for the system to work. Our mutual goal should be for veterans to submit a properly prepared claim, especially for undiagnosed illnesses, with the assistance of a service representative, so the VA may promptly and accurately adjudicate the claim. Then the veteran may obtain health care, which is our main objective, plus compensation, as needed.

The Resource Center believes *Morton* v. *West* does not apply to undiagnosed illness claims because such claims do not require a diagnosis and because the law states a veteran's claim of symptoms represents a [bona fide] claim. The Resource Center believes the VA, in order to avoid a completely adversarial system, must have a strong duty to assist veterans when filing the claim.

Two suggestions I would like to make are, first, that the Resource Center asks Congress to ask the General Accounting Office to review how the VA has handled undiagnosed illness claims and to suggest ways to improve the VA claims process. Then, if they have developed solid, reliable statistics, this may serve as a baseline to determine the effectiveness of any proposed training, which is our second suggestion.

The Resource Center believes that the current VA training is not satisfactory and we have also encountered several incidents where

VA physicians are not aware of the VA training manual, and we ask that the VA develop and implement within the next year training. Toward that end, we have developed our self-help guide, which is what I want to show you, to distribute to veterans' organizations, VA hospitals, and veterans, to give them an idea of what the claims process is all about.

[The prepared statement of Mr. Sullivan, with attachments, appears on p. 136.]

Mr. SULLIVAN. That concludes my remarks, and I would like to ask, at the request of one of the members of the subcommittee, that this be introduced. This is an update of our depleted uranium investigation.[1]

Mr. QUINN. Without objection, so ordered. It is included in the committee files.

Mr. SULLIVAN. And the correspondence that I mentioned in our testimony between the Resource Center and the VA regarding certain benefits.

Mr. QUINN. That would be helpful. Hearing no objection, that is included.

(See pp. 190 and 194.)

Mr. SULLIVAN. And then there is some brand new medical research that has come out regarding depleted uranium. I just wanted to make sure that the full subcommittee was aware of that.

Mr. QUINN. Sure. Thank you, and it is important, even for other people who testify, to have that information, once the final document of today's hearing is finished. Thank you, Paul. Mr. McNeill?

STATEMENT OF JOHN McNEILL, ASSISTANT DIRECTOR, VETERANS BENEFITS POLICY, VETERANS OF FOREIGN WARS OF THE UNITED STATES

Mr. MCNEILL. Mr. Chairman, my oral statement will be a brief synopsis of our written statement, which we request the latter to be inserted into the record.

Mr. QUINN. Without objection, so ordered. Thank you.

Mr. MCNEILL. Thank you, Mr. Chairman. We believe any problems by Gulf War veterans with obtaining health care or compensation is not so much because the current law or VA regulations are unfair or incomplete, or because the VA is incompetently implementing the law. As we state in our written testimony, we have been able to fix any problem that has occurred that involves a health care issue or compensation in relation to Public Law 103–446, and in the manner that we interpret Congress intended the system to operate.

Now, lest I be accused of being Pollyannish and oblivious to what was discussed here, I will state that, approximately 2 years ago, we in the VFW requested all our service officers to send all of the rating decisions pertaining to the Gulf War undiagnosed illnesses for review by our experts on our staff here in Washington. So, I am basing my statement upon that review, which also includes a second in-depth review of all appeals before our staff at the Board of Veterans' Appeals.

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[1] "Case Narrative: Depleted Uranium (DV) Exposures," Third Edition, September 20, 1998, by Dan Fahey.

There are, however, two major problems as we see it right now with Gulf War undiagnosed illnesses. The first is that, although there is a substantial amount of medical and scientific research apparently underway for Gulf War undiagnosed illnesses, nothing has yet happened to specifically identify positive relationships of a certain disability to service in the Gulf War area of operations. That is why both the pending National Academy of Sciences' report and the Centers for Disease Control's research agenda proposal are now very, very critical.

There is, however, one disability that right now seems to be an exception to that statement and should now quality for presumption of service connection, and that is amyotrophic lateral sclerosis, commonly known as Lou Gehrig's disease.

We understand that the VA has identified 28 Gulf War veterans with ALS where the expected incident rate should be 27. That is significant for two reasons. First, that the 28 is mostly likely an under-reported number, mainly because there are a lot of veterans diagnosed—or undiagnosed, I should say—with "motor neuron disorder, etiology unknown".

Again, the 28 figure is mostly likely an under-reported number; and, second, that it only takes a very slightly higher incident rate to justify establishing presumption. As we understand it, the expected incident rate should be 27. As Mr. Reyes pointed out, that is not even a "tie". Therefore, accordingly, the VFW believes that there should now be established a presumption of service connection for ALS for those veterans who served in the Gulf War area of operations, and we do not feel there is a current need for further research on this.

We do have a suggestion in this area. We think if there is a disability that cannot be ruled in or ruled out, there is always the possibility that we can create a temporary presumption of service connection, so as medical evidence or scientific research catches up with it, then we can decide—if it rules it out, then we will do adjustments in compensation; but if it rules it in, then the veteran continues with the compensation. I think we are at a stage, especially for ALS, that we should at least look seriously at a temporary presumption of service connection, particularly with that devastating disability we have right now. I think the average life span now is probably less than 5 years, and you are talking about veterans that are approximately 30 years old.

Mr. QUINN. Mr. McNeill, if I can interrupt you, I was on a C-SPAN show this morning, talking about this hearing and veterans affairs. I had a young man from Tyler, TX, call me, with ALS. He is 32 years old. I talked to him about the scientific study that is being done and we are going to take a look at this. He said, "Go ahead and study all you want. My doctor gave me 16 months."

Mr. MCNEILL. We have an incident where we helped a veteran out that—to his blessing, he just had a set of twins—but he has probably less than 6 months to live. He was service connected for "motor neuron disorder".

Mr. QUINN. I called this fellow back when I got to the office, in Tyler. His Congressman is Mr. Turner, so we are working on trying to find a way to help him. Anyway——

Mr. MCNEILL. We appreciate that very much.

Mr. QUINN. Well, I appreciate your bringing it to light. It is important.

Mr. MCNEILL. The second problem is the fact is, as it pertains to the VBA in general, the quality of decision making on Gulf War undiagnosed illnesses, and it relates to what we have testified here numerous times in the past, the woeful understaffing of the Veterans Benefits Administration at this time. I do not mean to preach this—do not want to preach. Please forgive me my trespasses. I will not repeat everything that is in the written testimony, but you have heard it before. However, there is just no way, with the current staffing, that VBA can conduct their mission as it pertains to Gulf War undiagnosed illnesses or for any claim, in general. We appreciate Congressman Filner's attempt this year to get an extra 250 personnel in the appropriation budget, and we appreciate your attempt last year, too, Mr. Chairman.

I would like to conclude my remarks with the fact that we also appreciate very much what Congress has done in legislation for veterans' entitlements this year. It has been a significant year and it is all the more significant with the pending further legislation, if it gets passed. We leave with a request that you now direct the focus on the staffing problems within the VBA.

Thank you, Mr. Chairman.

[The prepared statement of Mr. McNeill, with attachment, appears on p. 228.]

Mr. QUINN. Thank you, John. Mr. Frasure.

STATEMENT OF WILLIAM T. FRASURE, DEPUTY DIRECTOR, GOVERNMENT RELATIONS DEPARTMENT, VIETNAM VETERANS OF AMERICA

Mr. FRASURE. Thank you very much. VVA firmly believes that the VA interprets Public Law 103–446 in a limited and overly meticulous scope that has resulted in far too many sick Gulf War veterans having war-related conditions unattended to. The bottom line is that 72 percent of Gulf War veterans' claims for undiagnosed illnesses are denied. The bottom line is that thousands of Gulf War veterans with serious physical illnesses and conditions have been left unattended to.

VVA suggests three immediate steps be taken to remedy the problems associated with the adjudication process of Gulf War claims. There must be further training of VA adjudicators and VA physicians for Gulf War-specific cases. Current VA training materials harp too much on stress, while neglecting research on toxic exposures and not offering clear guidelines on claim verification, reporting procedures, or undiagnosed conditions.

The VA needs to develop a comprehensive claims processing training program that includes the VSOs and Gulf War veterans. VVA joins with the National Gulf War Resource Center in urging Congress to see to it that the General Accounting Office investigate the discrepancy between the congressional intent of Public Law 103–446 and the hollow implementation of this law by the VA.

The problems regarding claims adjudication of Gulf War undiagnosed illness claims are symptomatic of the overall situation at the VA. VVA sees a lack of accountability, a lack of quality assurance, and a lack of uniformity in the VA claims adjudication process. While VA contends that the claims adjudication process is non-adversarial, VVA and veterans know otherwise.

VVA suggests the following: Claims adjudicators should receive regular training and should be tested annually for proficiency in job knowledge; those adjudicators that do well should be rewarded, while those adjudicators who fail to make the grade should face punitive action; veterans should have the right to have an attorney assist in the development and representation of a claim at the regional level; and, finally, VA, in conjunction with the VSOs, should develop and implement a training program specific to non-traditional claims, for example, claims that deal with conditions that are not easily diagnosed and rely heavily on medical research opinions, such as Agent Orange and Gulf War undiagnosed illnesses.

The VA needs to exercise foresight and begin preparing now for the disabilities that are going to be the result of 21st century combat. Medical science regarding warfare is entering a nebulous, uncharted territory marked by rapid advancements in technology, genetics, and chemical and biological warfare. The recent announcement by the Rand Corporation that PB pills cannot be ruled out as a causal factor of Gulf War undiagnosed illnesses has served to only solidify to established pattern of dishonesty, arrogance, and deception by the Department of Defense in regards to Gulf War undiagnosed illnesses.

The Department of Defense publicly made the blanket statement that no soldiers were exposed to low-level chemical agents. It is now a known fact, a fact that was covered up and unearthed, that thousands of soldiers in the Gulf were exposed to low-level chemical agents. Department of Defense made the arbitrary statement that PB pills pose no health risk and are not a cause of Gulf War undiagnosed illnesses.

It has now been found that PB pills just may, in fact, be a causal factor of Gulf War undiagnosed illnesses. The absolute bottom line is that thousands of Gulf War veterans remain sick and are not receiving health care by the VA. These facts are well known outside of Washington, D.C, and have served as a major factor in the current recruiting dilemma of the military.

While the Department of Defense has expended vast resources toward down-playing the problem of Gulf War undiagnosed illnesses, high school students across the Nation have received the word from their older brothers, sisters, friends, and cousins that the military is a raw deal. It is the common perception today among youth that it is simply not worth it to join the military. This perception is, in large part, a direct result of the Department of Defense handling of the Gulf War undiagnosed illness issue and the handling by the Department of Veterans Affairs.

VVA urges Congress to keep in mind the bottom line, the health of our veterans, and to ensure that the Department of Defense and the Department of Veterans Affairs does not repeat this debacle.

Thank you for this opportunity. I stand ready for any questions you may have.

[The prepared statement of Mr. Frasure appears on p. 233.]

Mr. QUINN. Thank you, Bill. Thank you very much. On behalf of your organization, we thank you, too. Mr. Filner.

Mr. FILNER. I just want to thank all the panelists. I think there is a commonality that should be of great help to us as we go beyond this hearing. I hope, Mr. Puglisi, there was a breakthrough today. I do not know. I hope the facts lead to what you suggested.

Let me just make one final statement very briefly. I guess, if you bring this back to Mr. Thompson, in his opening statement, he said, in sort of justification of how things were going, that the Gulf War cohort had the highest percentage of living veterans in receipt of disability compensation. That was to show, "Oh, we are doing our job," in anticipation of the criticism we had. Mr. Sullivan pointed out that close to half, I think, 43 percent or something, of Gulf War veterans eligible for VA benefits are seeking health care.

Now, the fact that there is such a high percentage here, whatever statistic you use, should not be used to say we are doing our job. The statistics should be used to say, "Hey, this is an incredible problem that we have not fully recognized as a Nation, at least our major bureaucracies apparently have not, and that we have to devote, in a focused way, the resources of this Nation to solving it, to giving treatment to the veterans, to giving them the benefits, and to finding the reason why, because we are going to face this again and again in the coming years."

You pointed out the negative reaction of recruits, et cetera. I think that is part of the anthrax vaccination situation—nobody will trust what the military says. I would not take an anthrax vaccination, given this situation, when that could have been the cause of what has given people these incredible symptoms.

Anyway, the fact that we have such a high percentage, folks in the VA, should not be used as a justification for your job. It should be used to redouble your efforts to figure out what is happening here and to get treatment. I think you all heard that there is a commonality here, and amongst the members of this committee, that the VA has narrowly interpreted the statute, that something more has to be done. We intend to make sure it happens, but we certainly want your cooperation to do it.

Thank you.

Mr. QUINN. Thank you, Bob.

Mr. Reyes, closing remarks?

Mr. REYES. No. Thank you, Mr. Chairman.

Mr. QUINN. Let me conclude then by thanking this panel and the other panels who were here with us this morning, and apologize a little bit that some of this is second or third—Doctor—fourth time around for some of this information. We appreciate it very much. We are going to do a little bit of a history ourselves to bring us up to date.

I want to say to Mr. Filner and the rest of the subcommittee members that there was some hesitation in the beginning to put this hearing together this morning, but I think it turned out exactly the way we planned it and was very, very helpful. You will hear from us.

Thank you all. We are concluded.

[Whereupon, at 12:24 p.m., the subcommittee was adjourned.]

APPENDIX

VA Data Shows Increased Percentage of Undiagnosed Illness and Total Disability Among Certain Groups of Veterans Who Served in Southwest Asia Between August 2, 1990 and July 31, 1991

Democratic Staff Follow Up Report

October 25, 1999

A substantially greater percentage of servicemembers who served in Southwest Asia during the Conflict period of August 2, 1990 through July 31, 1991 have been rated by the Department of Veterans Affairs (VA) as being disabled due to one or more service-connected undiagnosed illnesses, when compared to servicemembers who served in the Gulf only after July 31, 1991.[1] In addition, certain subgroups of Conflict servicemembers have been more likely to file, and VA has been more likely to approve, a claim for service-connected disability compensation rated at 10% or more based on an undiagnosed illness compared to other servicemembers who served during the same time period. All servicemembers who have served in the Southwest Asia theater of operations since August 2, 1990 (the beginning of the Gulf War) are eligible to apply for service-connected disability compensation under the undiagnosed illness provisions of 38 U.S.C. § 1117.[2]

Although the total number of veterans from each group is relatively small, 71 servicemembers who were near Khamisiyah, Iraq, in early March of 1991 have been granted non-service-connected wartime pension benefits for a total and permanent disability which VA found unrelated to their military service.[3] The percentage for the Khamisiyah veterans granted a pension for a permanent and total disability not deemed related to military service is 0.07% compared to veterans who served in the Southwest theater of operations during the Conflict (0.04%) or in Southwest Asia after July 31, 1991 (0.01%).

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[1] Unless otherwise indicated all references to veterans with undiagnosed illnesses in this report refers to veterans who have been "rated" by the Veterans Benefits Administration as having undiagnosed illnesses rated at 10% or more. The vast majority of these veterans are currently receiving compensation, however, a few are not currently receiving benefits due to other factors such as receipt of retired pay. Veterans whose undiagnosed illness became manifest while they were in Southwest Asia during the Gulf War may be service connected with a 0% rating, however, ordinarily no payment is made for conditions rated at 0%.

[2] The Gulf War began on August 2, 1990 and has not yet officially ended.

Definitions

For purposes of this analysis, the comparison groups are defined as follows:

1. **Conflict** servicemembers served between August 2, 1990 and July 31, 1991 in the Southwest Asia theatre of operations.[4]

2. **Theater** servicemembers served on or **after July 31, 1991** in the Southwest Asia theatre of operations, but did not serve during the time of the Conflict.[5]

3. **Khamisiyah** servicemembers served on or after August 2, 1990 in the Southwest Asia theatre of operations **and** were potentially exposed to hazardous substances in the munitions destruction at Khamisiyah.[6]

4. **Al Jubayl** servicemembers were determined by DoD to have been physically located in the vicinity of Al Jubayl during the Gulf War.[7]

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[3] Pension benefits are paid to low-income veterans of a "period of war" (such as the Persian Gulf War) who are totally and permanently disabled due to non-service-connected disabilities. The same form is used to apply for both compensation and pension benefits.

[4] For comparison involving subgroups of servicemembers who served during the Conflict period, the Conflict data, where noted, excludes servicemembers who were **potentially exposed** to demolitions of munitions at **Khamisiyah** in March and April of 1991 or to various activities at **Al Jubayl** in January of 1991.

[5] The Southwest theater of operations includes Iraq, Kuwait, Saudi Arabia, the neutral zone between Iraq and Saudi Arabia, Bahrain, Qatar, the United Arab Emirates, Oman, the Gulf of Aden, the Gulf of Oman, the Persian Gulf, the Red Sea, and the airspace above these locations. 38 C.F.R. §3.317.

[6] "Gulf War Veteran Statistics: VA Khamisiyah Populations C&P Stats." (July 15,1999 report for data through June 30, 1999.) VA provided data for all claims involving Conflict veterans. In addition, separate data was provided for the Khamisiyah and Al Jubayl units.

[7] Data for the Al Jubayl group was based on claims of servicemembers from the 40th NMCB of Pearl Harbor, HI and the 24th NMCB of Huntsville, AL who comprised a Naval Mobile Construction Battalion described in the Case Narrative of Al Jubayl, Saudi Arabia reported by the Office of the Special Assistant for Gulf War illnesses as updated August 19, 1997. (www.gulflink.osd.mil/aljubayl)

In order to compare these various groups, the percentage of servicemembers in each group (e.g. Khamisiyah servicemembers who are veterans with one or more undiagnosed service-connected disability conditions rated at 10% or more) who have been awarded service-connected disability compensation by the VA for an undiagnosed illness was divided by the total number of servicemembers in that group. The following table shows the number and percentage of servicemembers from each group filing claims for service-connected compensation for undiagnosed illnesses.

Table I
Percentage of Servicemembers Filing Claims Based on Undiagnosed Illnesses

Group	Total Number of Servicemembers	Number Filing Claims for Undiagnosed Illnesses	Percentage Filing Claims
Theater	435,238	436	0.1%
Total Conflict	696,621	10,403	1.5%
Conflict Excluding Khamisiyah and Al Jubayl	595,568	7,961	1.3%
Khamisiyah	99,719	2,376	2.4%
Al Jubayl	1,334	66	4.9%

Claims for Undiagnosed Illnesses

Veterans who served in the Gulf Theater have complained of illnesses and symptoms of illness which can not be diagnosed or clearly defined. In order to provide service-connected disability compensation for these veterans, Congress enacted Public Law 103-446, codified at 38 U.S.C. § 1117. VA regulations require that the disabling symptoms of the undiagnosed illness be present for at least six months in order to approve the claim. 38 C.F.R. §3.317.

Approximately 25% of the veterans who served in the Gulf during the Conflict have filed claims for service-connected disability compensation and/or non-service-connected low-income pension benefits. A much smaller percentage of these Conflict servicemembers (1.5%) have filed a claim for service-connected disability compensation based upon an undiagnosed illness. Veterans filing a claim for benefits may assert both diagnosed and undiagnosed disabilities and may be awarded either service-connected disability compensation or a disability pension (for permanent and total disabilities found by the VA as unrelated to military service) on the basis of the same claim.[8] In general, claims filed for service-connected disability compensation based on undiagnosed illnesses are less likely to be approved, compared to claims for service-connected compensation based on a diagnosed illness or claims for non-service-connected pension benefits.[9]

Of the 152,494 claims processed by VA for Conflict veterans through June 30, 1999, 132,891 (87%) are reported to have been granted compensation or pension benefits.[10] Service-connected disability compensation claims for undiagnosed illness have been filed by 10,403 Gulf War Conflict veterans. Of these claims only 2,583 (25%) have been granted. Although the number of claims granted for service-connected disability compensation for undiagnosed illnesses is small for all groups, the percentage of veterans filing claims for service-connected disability compensation based on undiagnosed illnesses is significantly higher for veterans who served in Southwest Asia during the Conflict period, compared to veterans who served in the Theatre after July 31, 1991.

The following table shows, by veteran group, the number and percentage of claims for service-connected disability compensation based upon undiagnosed illnesses rated by the VA at 10% or more.

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[8] VBA data concerning grants and denial of benefits is not separated by compensation or pension. VA includes a grant of 0% service-connected for a claim as a "grant" of benefits.

[9] The percentage of claims allowed is determined by dividing the number of claims allowed for undiagnosed illnesses by the total number of claims processed for undiagnosed illnesses.

[10] This includes veterans who have been granted service-connection for a disability rated at 0%, but who receive no cash benefits.

Table II
Number and Percentage of Servicemembers Granted Service-Connected Disability Compensation Rated by VA at 10% or More for Undiagnosed Illnesses

Group	Total Number of Servicemembers	Number Rated at 10% or More for Undiagnosed Illness	Percentage Rated at 10%
Theater	435,238	91	0.02%
Total Conflict	696,621	2,583	0.37%
Conflict Excluding Khamisiyah and Al Jubayl	595,568	2,002	0.33%
Khamisiyah	99,719	562	0.56%
Al Jubayl	1,334	19	1.42%

The subgroups most likely to file a claim for service-connected disability based upon an undiagnosed illnesses include: Seabees from a Naval Mobile Construction Battalion who served at the Port of Al Jubayl, Saudi Arabia and servicemembers potentially exposed to toxic substances at Khamisiyah. Women servicemembers in all groups (Conflict, Theater and Khamisiyah) are more likely to be service-connected for undiagnosed illnesses than their male counterparts.

As of June 30, 1999, 343 Conflict veterans (including 71 Khamisiyah veterans) and 49 Theater veterans have been adjudicated as permanently and totally disabled due to disabilities not attributed to their military service and are receiving pension benefits. An analysis of these claims, in particular the cases involving Khamisiyah veterans, could indicate whether or not any significant number are due to symptoms similar to veterans who have been service-connected for undiagnosed illnesses.

The Khamisiyah Servicemembers

Data for the Khamisiyah subgroup provides information on 99,719 potentially exposed servicemembers.[11] The percentage of Khamisiyah servicemembers (0.56%) who have been granted **service-connection rated at 10% or more for an undiagnosed illnesses** is **28 times greater than** Theater servicemembers (0.02%) who served in the Southwest Asia theater after the end of the Conflict.[12] This represents an increase from the 1998 staff report finding that Khamisiyah veterans were 20 times more likely than Theater veterans to be rated with a 10% service-connected disability based upon undiagnosed illnesses.[13] Further analysis, including consideration of the continually expanding base of servicemembers who have served in the Gulf since July 31, 1991, would be necessary to evaluate this increase.

Khamisiyah veterans have applied for service-connected disability compensation benefits and have been granted service-connected disability at an increased rate (0.56%) for undiagnosed illnesses when compared to veterans of the Conflict who were not exposed at either Khamisiyah or Al Jubayl (0.33%). Servicemembers who were potentially subjected to hazardous agents at Khamisiyah represent almost 21% of the total Conflict veterans who have been rated for undiagnosed illnesses although they represent only 14% of the servicemembers who served in Southwest Asia during the Conflict period.

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[11] Khamisiyah population information is based on a Department of Defense (DoD) model of individuals presumed to have been physically located in designated areas following the munitions destruction occurring on March 31, 1991. The Central Intelligence Agency (CIA) indicated on July 13, 1999, that the number potentially exposed at Khamisiyah may be fewer than this estimate. (*Status of the Intelligence Community's Study of Potential Exposure of Coalition Soldiers to Chemical, Biological, and Radiological Agents*, Walpole, Robert D., Statement for the Record submitted to the Presidential Special Oversight Board for Department of Defense Investigations of Gulf War Chemical and Biological Incidents.)

[12] The percentage of theater veterans with undiagnosed illness is 0.02 (91 out of 435,238) versus the Khamisiyah percentage of 0.56 (562 out of 99,719).

[13]This Report is a follow up to the report contained in the July 16, 1998, hearing before the Subcommittee on Benefits of the Committee on Veterans' Affairs of the U.S. House of Representatives on "Standards for Adjudication Claims Presented By Veterans Suffering from Hepatitis C, Cerebral Malaria and Persian Gulf Illness". Hearing Serial No. 105-43 pages 12-30. VA provided Democratic staff of the Committee on Veterans' Affairs with data from its "VBA Gulf War Veterans Information System". This database contains information from the Veterans Benefits Administration (VBA) Compensation and Pension Master Record (C&PMR) file, Beneficiary Identification and Record Locator System (BIRLS) records and VBA Pending Issue File and is cross-referenced with data from the Armed Services' Defense Manpower Data Center. Unique Social Security numbers are used to cross-reference the databases. This crosscheck is designed to prevent multiple counting of the same veteran and to verify the location of the veteran during military service.

The increased rate of undiagnosed illness in the Khamisiyah subgroup deserves further examination. The small number of claims which have been rated on the basis of an undiagnosed illness is an important factor. The data does not indicate whether the claims based upon undiagnosed illnesses by this subgroup were filed before or after the Khamisiyah veterans were notified by the Department of Defense that they may have been exposed to toxic substances.[14] However, the data does indicate that the higher percentage of undiagnosed illnesses among the Khamisiyah veterans identified in the 1998 Democratic staff report continues upon review of present data.[15]

Also troubling is the data concerning non-service-connected disability pension benefits for Khamisiyah veterans. In order to qualify for non-service-connected disability pension benefits, veterans of a period of war must demonstrate that they are **permanently and totally disabled** and that their income is below certain thresholds. In 1999, for a single veteran with no dependents and no countable income, a pension of $8,778 per year is paid. Of the 99,719 Khamisiyah veterans, 71 (0.07%) have been awarded non-service-connected disability pension benefits due to a permanent and total disability which VA did not attribute to military service. In contrast to the Khamisiyah group, 272 (0.04%) of the 596,902 non-Khamisiyah Conflict veterans have been awarded non-service-connected disability pension benefits due to a permanent and total disability which VA did not attribute to military service. An even smaller number (49) and percentage (0.01%) of the 435,238 Theater veterans have been awarded non-service-connected disability pension benefits.

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[14] Letters were mailed between July 25 and August 3, 1997, to members of the units identified as being close to Khamisiyah, Iraq during early March, 1991, informing them that they may have been exposed to low levels of chemicals. (Information Guide The Office of the Special Assistant to the Deputy Secretary of Defense for Gulf War Illnesses contained in a report submitted to the Speaker of the U.S. House of Representatives September 29, 1999, by Dr. Sue Bailey, Assistant Secretary of Defense) It is unlikely that Khamisiyah veterans who received these letters would have filed a claim based on undiagnosed illnesses and have had that claim decided by March 30, 1998, the cut off date for the 1998 Democratic staff report. The letters may contribute to the increase in the 1999 data set.

[15] A study of the postwar morbidity of Khamisiyah servicemembers comparing the rate of hospitalization in Department of Defense hospitals from March 10, 1991, through September 30, 1995, did not find any increased rate of hospitalization rates between veterans potentially exposed at Khamisiyah and non-exposed veterans of the Gulf War. "The Postwar Hospitalization Experience of Gulf War Veterans Possibly exposed to Chemical Munitions Destruction at Khamisiyah, Iraq", *American Journal of Epidemiology* (Vol. 150, No. 5 1999) pp. 532-540.

The following table shows the number and percentage of claims granted for non-service-connected pension in the Theater, Conflict and Khamisiyah groups.[16]

Table III
Number and Percentage of Servicemembers Receiving a VA Pension Based on a Permanent and Total Disability Not Associated With Military Service

Group	Total Number of Servicemembers	Number Receiving Pension	Percentage Receiving Pension
Theater	435,238	91	0.02%
Total Conflict	696,621	2,583	0.37%
Conflict Excluding Khamisiyah	596,902	2,021	0.33%
Khamisiyah	99,719	562	0.56%

The Al Jubayl Servicemembers

VA provided data concerning 1,334 servicemembers from two units (NMCB -24 and NMCB-40) identified in the case narrative report of Al Jubayl from the Department of Defense Office of Special Assistant for Gulf War Illnesses. Sixty-six of these veterans filed claims for service-connected disability compensation benefits based upon an undiagnosed illness. Of that number, 19 of the claims have been allowed with a rating of 10% or more and 47 denied.

Current Findings

The percentage of Al Jubayl servicemembers who were granted service-connected compensation benefits based on undiagnosed illnesses was 68 times higher (1.42% for Al Jubayl) than Theater servicemembers (0.02%). Because the number of veterans in the Al Jubayl group is relatively small, the significance of this difference is not clear.

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[16] The Al Jubayl pension data was not available for this date.

Female Servicemembers

VA data reports that 49,982 servicewomen served in Southwest Asia during the Gulf Conflict. Of this number 8,348 were potentially exposed to toxic substances at Khamisiyah. No servicewomen were identified in the two Al Jubayl units for whom data was obtained. The percentage of servicewomen who served during the Conflict and Theater is approximately 7% of the total servicemembers who served in Southwest Asia during these periods.

Current Findings

The percentage of servicewomen from both the Conflict and Theater groups who have been service-connected for undiagnosed illnesses is higher than that of their male counterparts. The difference between male and female servicemembers is less dramatic for Khamisiyah veterans. Servicemembers of both sexes who were potentially exposed at Khamisiyah are more likely to be service-connected for undiagnosed illnesses than other Conflict veterans who were not potentially exposed at Khamisiyah or Al Jubayl. Of the servicewomen potentially exposed at Khamisiyah, 0.7% have been granted service-connection compensation rated at 10% or more based upon undiagnosed illnesses compared to the 0.55% rate for Khamisiyah servicemen. The corresponding percentages for Conflict veterans who were not in the Khamisiyah subgroup are 0.50% for servicewomen and 0.32% for servicemen. The following table shows the number and percentage of female and male servicemembers who have had claims for undiagnosed illnesses allowed.

Table IV

Number and Percentage of Servicewomen and Servicemen Rated By VA For Service-Connected Disabilities of 10% or More Based On Undiagnosed Illnesses

Group	Number of Servicewomen	Number of Servicemen	Percentage Servicewomen	Percentage Servicemen
Theater	17	74	0.05%	0.02%
Total Conflict	267	2,297	0.53%	0.35%
Conflict Excluding Khamisiyah	208	1,794	0.50%	0.32%
Khamisiyah	59	503	0.71%	0.55%

This data suggests that further investigation is warranted concerning the differences between female and male servicemembers who have filed claims for undiagnosed illnesses:

Conclusion

This data only provides an indication of the difference in the rate of undiagnosed illnesses among certain groups of veterans who served in Southwest Asia and who have filed service-connected compensation claims with the VA based on undiagnosed illnesses. Further analysis is needed to determine whether or not undiagnosed illnesses for various groups can be correlated to their period of service and location in Southwest Asia. Further study is needed to examine the relationship between possible exposure to toxic substances at Khamisiyah, Al Jubayl and undiagnosed illnesses which may merit VA compensation.

In addition, the increased percentage of Khamisiyah veterans who have a non-service-connected disability rated as permanent and total for pension purposes suggests the need for further analysis of their medical conditions, as well as the other Conflict veterans who have been awarded pension benefits. Such analysis could clarify if all of these claims are clearly unrelated to military service or if they are similar to claims awarded on the basis of a constellation of symptoms which may be more closely associated with the signs and symptoms reported by veterans whose claims for service-connected disability compensation have been granted.

It is imperative that VA and the nation seek to better understand the phenomena experienced by a small but significant group of Gulf War veterans which has been labeled by some as "Gulf War Syndrome."[17] Data concerning veterans seeking and obtaining service-connected disability compensation and non-service-connected pension benefits from the VA must be considered, analyzed and evaluated as part of the overall effort to determine what effect the Gulf War has had on the health and employability of the men and women who served in the Gulf.

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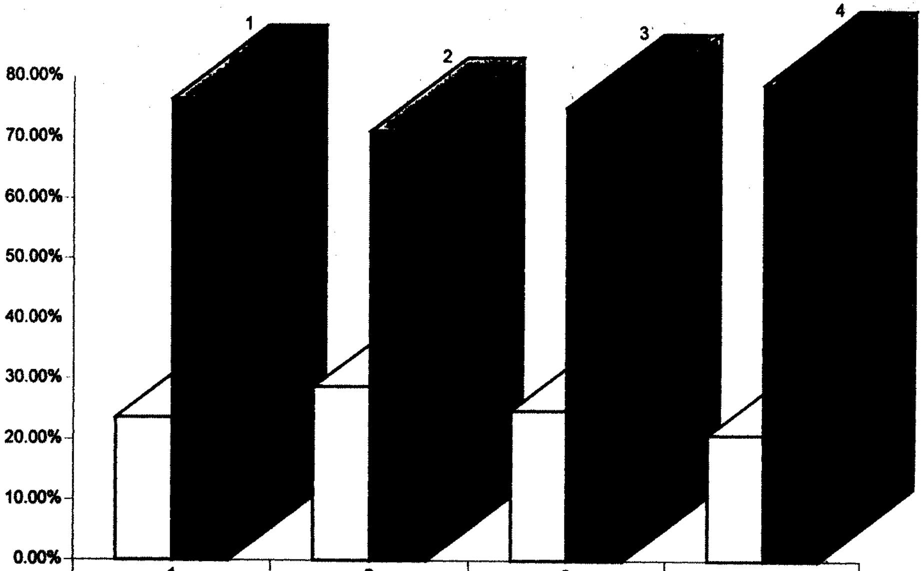
[17] The most recent edition of the *Merck Manual* describes "Gulf War Syndrome" in its chapter on "Syndromes of Uncertain Origin" as "a constellation of illnesses experienced by 5,000 to 80,000 U.S. veterans" after returning from the Gulf War (1992).

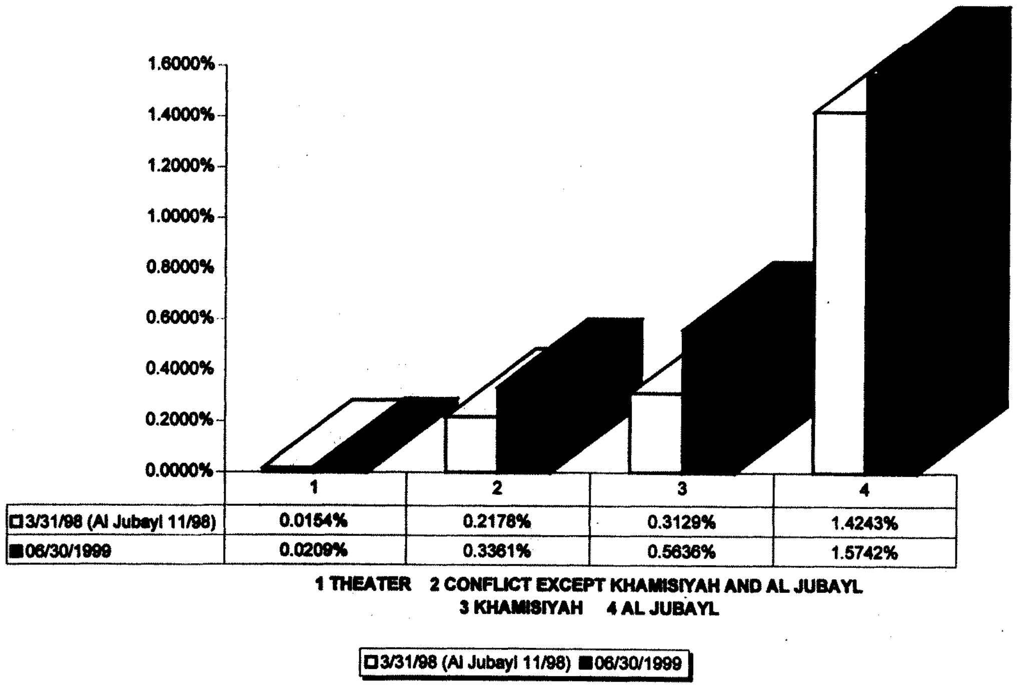
Percentage of Claims For Undiagnosed Illness Rated At 10% or More Granted and Denied



	1	2	3	4
☐ Percentage of Claims Granted	23.65%	28.79%	24.83%	20.87%
■ Percentage of Claims Denied	76.35%	71.21%	75.17%	79.13%

1 Khamisiyah 2 Al Jubayl 3 Total Conflict 4 Theater

Percentage of Servicemembers Rated at 10% or More for Undiagnosed Illness March 31, 1998 and June 30, 1999

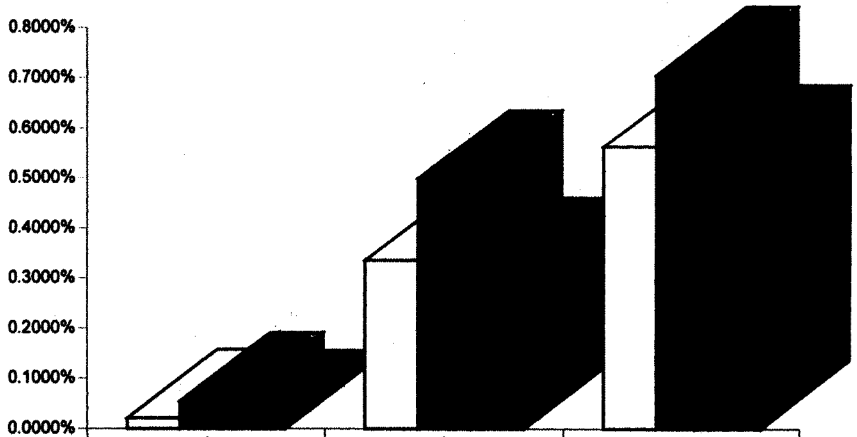


	1	2	3	4
□3/31/98 (Al Jubayl 11/98)	0.0154%	0.2178%	0.3129%	1.4243%
■06/30/1999	0.0209%	0.3361%	0.5636%	1.5742%

1 THEATER 2 CONFLICT EXCEPT KHAMISIYAH AND AL JUBAYL
3 KHAMISIYAH 4 AL JUBAYL

Theater - service in Southwest Asia after July 31, 1991.
Conflict - service in Southwest Asia 8/2/90 - 7/31/91.

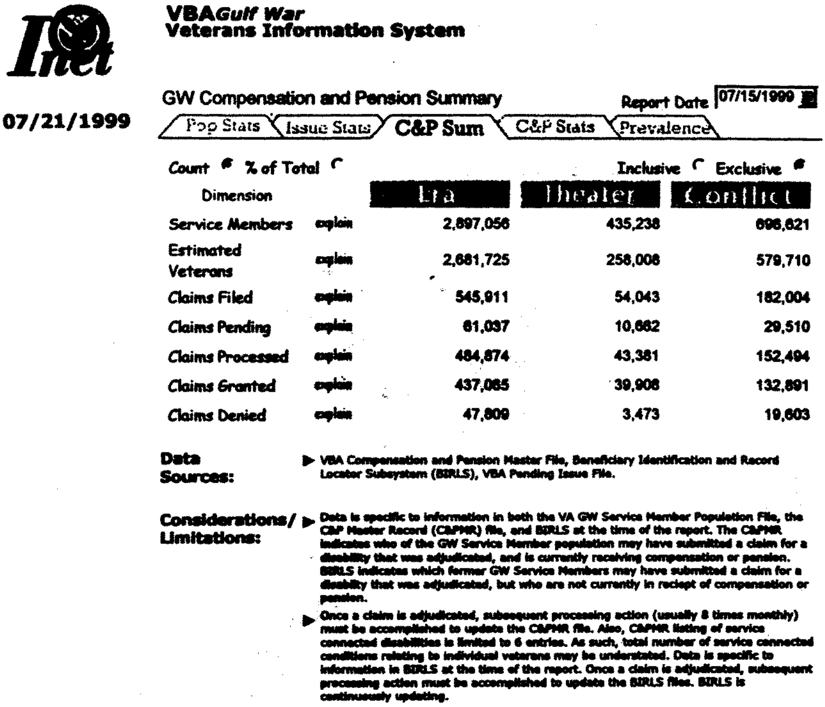
Percentage of Gulf War Servicemembers Rated at 10% or More by the Department of Veterans Affairs for Undiagnosed Illness by Gender (June 30, 1999)



	1	2	3
ALL SERVICEMEMBERS	0.0209%	0.3361%	0.5636%
FEMALE SERVICEMEMBERS	0.0543%	0.4996%	0.7068%
MALE SERVICEMEMBERS	0.0183%	0.3239%	0.5505%

1 THEATER 2 CONFLICT EXCEPT KHAMISIYAH 3 KHAMISIYAH

☐ ALL SERVICEMEMBERS ■ FEMALE SERVICEMEMBERS ■ MALE SERVICEMEMBERS



VBA*Gulf War*
Veterans Information System

07/21/1999

GW Compensation and Pension Summary

Report Date 07/15/1999

Count ● % of Total ○ Inclusive ○ Exclusive ●

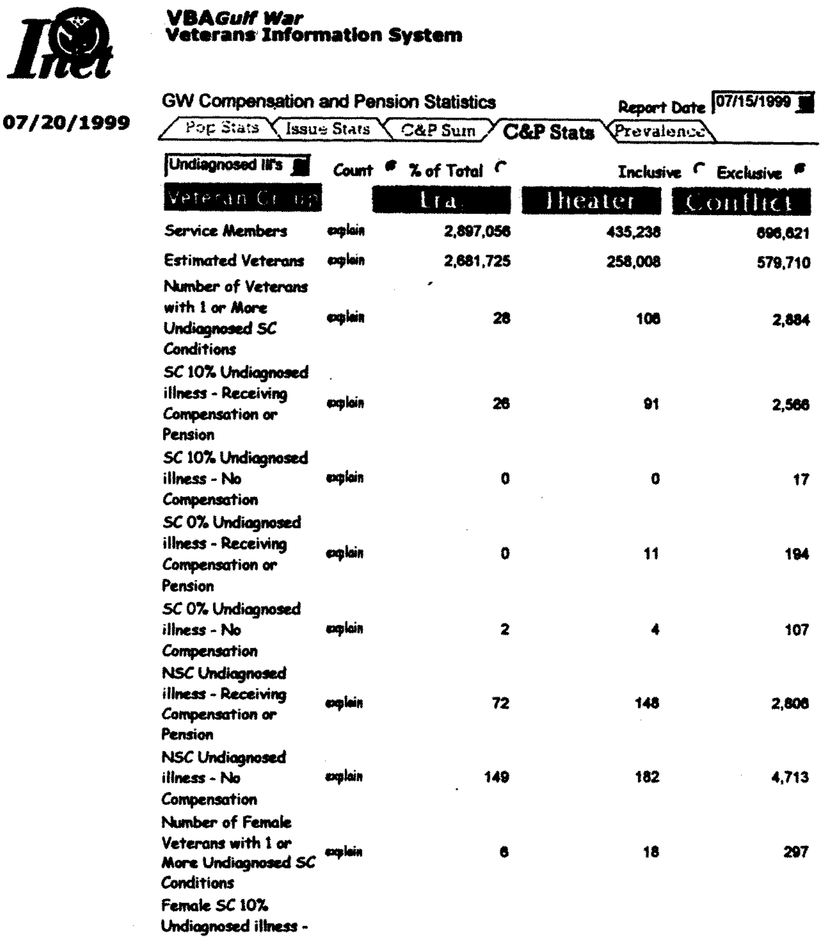
Dimension		Era	Theater	Conflict
Service Members	explain	2,697,056	435,238	696,621
Estimated Veterans	explain	2,681,725	258,008	579,710
Claims Filed	explain	545,911	54,043	182,004
Claims Pending	explain	61,037	10,662	29,510
Claims Processed	explain	484,874	43,381	152,494
Claims Granted	explain	437,065	39,908	132,891
Claims Denied	explain	47,809	3,473	19,603

Data Sources:

- VBA Compensation and Pension Master File, Beneficiary Identification and Record Locator Subsystem (BIRLS), VBA Pending Issue File.

Considerations/ Limitations:

- Data is specific to information in both the VA GW Service Member Population File, the C&P Master Record (C&PMR) file, and BIRLS at the time of the report. The C&PMR indicates who of the GW Service Member population may have submitted a claim for a disability that was adjudicated, and is currently receiving compensation or pension. BIRLS indicates which former GW Service Members may have submitted a claim for a disability that was adjudicated, but who are not currently in reciept of compensation or pension.
- Once a claim is adjudicated, subsequent processing action (usually 8 times monthly) must be accomplished to update the C&PMR file. Also, C&PMR listing of service connected disabilities is limited to 6 entries. As such, total number of service connected conditions relating to individual veterans may be understated. Data is specific to information in BIRLS at the time of the report. Once a claim is adjudicated, subsequent processing action must be accomplished to update the BIRLS files. BIRLS is continuously updating.



VBA*Gulf War*
Veterans Information System

07/20/1999

GW Compensation and Pension Statistics

Report Date 07/15/1999

Undiagnosed Ill's   Count ● % of Total ○   Inclusive ○ Exclusive ●

Veteran Group		Era	Theater	Conflict
Service Members	explain	2,897,056	435,238	696,621
Estimated Veterans	explain	2,681,725	258,008	579,710
Number of Veterans with 1 or More Undiagnosed SC Conditions	explain	28	106	2,884
SC 10% Undiagnosed illness - Receiving Compensation or Pension	explain	26	91	2,566
SC 10% Undiagnosed illness - No Compensation	explain	0	0	17
SC 0% Undiagnosed illness - Receiving Compensation or Pension	explain	0	11	194
SC 0% Undiagnosed illness - No Compensation	explain	2	4	107
NSC Undiagnosed illness - Receiving Compensation or Pension	explain	72	148	2,806
NSC Undiagnosed illness - No Compensation	explain	149	182	4,713
Number of Female Veterans with 1 or More Undiagnosed SC Conditions	explain	6	18	297
Female SC 10% Undiagnosed illness -				

Receiving Compensation or Pension	explain	6	17	265
Female SC 10% Undiagnosed illness - No Compensation	explain	0	0	2
Female SC 0% Undiagnosed illness - Receiving Compensation or Pension	explain	0	1	19
Female SC 0% Undiagnosed illness - No Compensation	explain	0	0	11
Female NSC Undiagnosed illness - Receiving Compensation or Pension	explain	5	19	250
Female NSC Undiagnosed illness - No Compensation	explain	21	13	441

Data Sources:

- VBA Compensation and Pension Master File
- Beneficiary Identification and Record Locator Subsystem (BIRLS)
- VBA Pending Issue File
- GW Khamisiyah Service Member population file
- GW Al Jubayl Service Member population file

Considerations/ Limitations:

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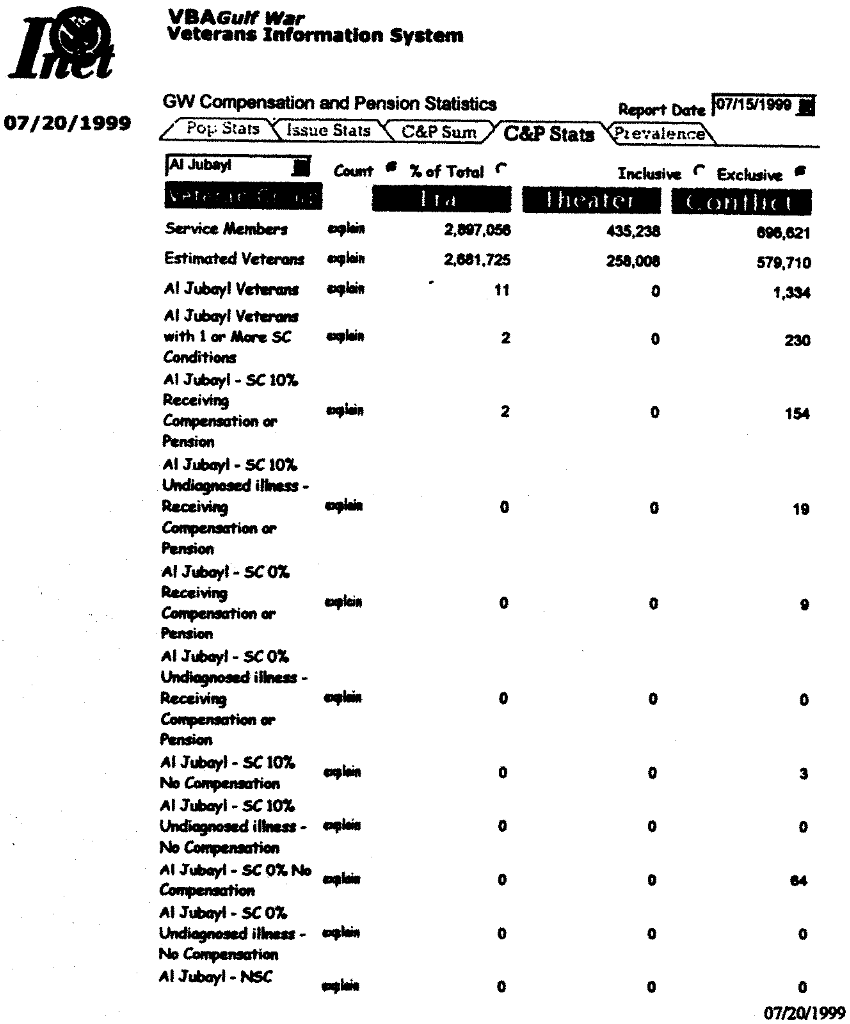
- Khamisiyah population Information is based on a DOD model of individuals presumed to have been physically located in designated area's following the munitions destruction occurring on 3/31/91. Warfare mobility and the uncertainty of actual location of individuals in a given area at the time of the event impacts identification accuracy.
- Al Jubayl population Information is based on DOD records of individuals presumed to have been physically located in the vicinity of Al Jubayl during the Gulf War.



VBA*Gulf War*
Veterans Information System

07/20/1999

GW Compensation and Pension Statistics

Report Date 07/15/1999

Al Jubayl

Count ● % of Total ○ Inclusive ○ Exclusive ●

Veteran Group		Era	Theater	Conflict
Service Members	explain	2,897,056	435,238	696,621
Estimated Veterans	explain	2,681,725	258,008	579,710
Al Jubayl Veterans	explain	11	0	1,334
Al Jubayl Veterans with 1 or More SC Conditions	explain	2	0	230
Al Jubayl - SC 10% Receiving Compensation or Pension	explain	2	0	154
Al Jubayl - SC 10% Undiagnosed illness - Receiving Compensation or Pension	explain	0	0	19
Al Jubayl - SC 0% Receiving Compensation or Pension	explain	0	0	9
Al Jubayl - SC 0% Undiagnosed illness - Receiving Compensation or Pension	explain	0	0	0
Al Jubayl - SC 10% No Compensation	explain	0	0	3
Al Jubayl - SC 10% Undiagnosed illness - No Compensation	explain	0	0	0
Al Jubayl - SC 0% No Compensation	explain	0	0	64
Al Jubayl - SC 0% Undiagnosed illness - No Compensation	explain	0	0	0
Al Jubayl - NSC	explain	0	0	0

07/20/1999

Receiving Pension				
Al Jubayl - NSC Undiagnosed illness - Receiving Pension or compensation	explain	0	0	6
Al Jubayl - NSC No Pension	explain	0	0	62
Al Jubayl - NSC Undiagnosed illness - No Pension	explain	0	0	41

Data Sources:

- VBA Compensation and Pension Master File
- Beneficiary Identification and Record Locator Subsystem (BIRLS)
- VBA Pending Issue File
- GW Khamisiyah Service Member population file
- GW Al Jubayl Service Member population file

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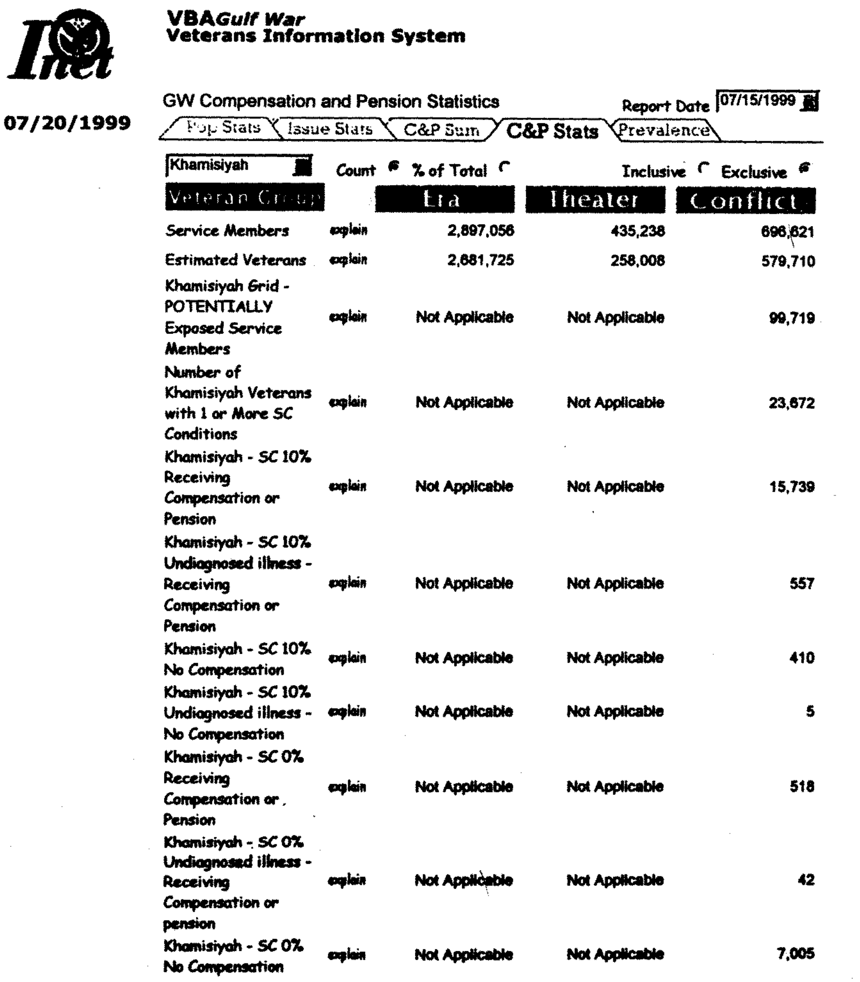
- Al Jubayl population Information is based on DOD records of individuals presumed to have been physically located in the vicinity of Al Jubayl during the Gulf War.



VBA*Gulf War*
Veterans Information System

07/20/1999

GW Compensation and Pension Statistics

Report Date 07/15/1999

Khamisiyah

Count ● % of Total ○ Inclusive ○ Exclusive ●

Veteran Group		Era	Theater	Conflict
Service Members	explain	2,897,056	435,238	696,621
Estimated Veterans	explain	2,681,725	258,008	579,710
Khamisiyah Grid - POTENTIALLY Exposed Service Members	explain	Not Applicable	Not Applicable	99,719
Number of Khamisiyah Veterans with 1 or More SC Conditions	explain	Not Applicable	Not Applicable	23,672
Khamisiyah - SC 10% Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	15,739
Khamisiyah - SC 10% Undiagnosed illness - Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	557
Khamisiyah - SC 10% No Compensation	explain	Not Applicable	Not Applicable	410
Khamisiyah - SC 10% Undiagnosed illness - No Compensation	explain	Not Applicable	Not Applicable	5
Khamisiyah - SC 0% Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	518
Khamisiyah - SC 0% Undiagnosed illness - Receiving Compensation or pension	explain	Not Applicable	Not Applicable	42
Khamisiyah - SC 0% No Compensation	explain	Not Applicable	Not Applicable	7,005

Khamisiyah - SC 0% Undiagnosed illness - No Compensation	explain	Not Applicable	Not Applicable	32
Khamisiyah - NSC Receiving Pension	explain	Not Applicable	Not Applicable	71
Khamisiyah - NSC Undiagnosed illness - Receiving Pension or compensation	explain	Not Applicable	Not Applicable	654
Khamisiyah - NSC No Pension	explain	Not Applicable	Not Applicable	3,732
Khamisiyah - NSC Undiagnosed illness - No Pension	explain	Not Applicable	Not Applicable	1,086
Khamisiyah Grid - POTENTIALLY Exposed Female Service Members	explain	Not Applicable	Not Applicable	8,348
Number of Female Khamisiyah Veterans with 1 or More SC Conditions	explain	Not Applicable	Not Applicable	2,049
Khamisiyah Female - SC 10% Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	1,431
Khamisiyah Female - SC 10% Undiagnosed illness - Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	58
Khamisiyah Female - SC 10% No Compensation	explain	Not Applicable	Not Applicable	29
Khamisiyah Female - SC 10% Undiagnosed illness - No Compensation	explain	Not Applicable	Not Applicable	1
Khamisiyah Female - SC 0% Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	57
Khamisiyah Female - SC 0% Undiagnosed illness - Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	5

Khamisiyah Female - SC 0% No Compensation	explain	Not Applicable	Not Applicable	532
Khamisiyah Female - SC 0% Undiagnosed illness - No Compensation	explain	Not Applicable	Not Applicable	4
Khamisiyah Female - NSC Receiving Pension	explain	Not Applicable	Not Applicable	3
Khamisiyah Female - NSC Undiagnosed illness - Receiving Pension	explain	Not Applicable	Not Applicable	54
Khamisiyah Female - NSC No Pension	explain	Not Applicable	Not Applicable	338
Khamisiyah Female - NSC Undiagnosed illness - No Pension	explain	Not Applicable	Not Applicable	101

Data Sources:

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- Beneficiary Identification and Record Locator Subsystem (BIRLS)
- VBA Pending Issue File
- GW Khamisiyah Service Member population file
- GW Al Jubayl Service Member population file

Considerations/ Limitations:

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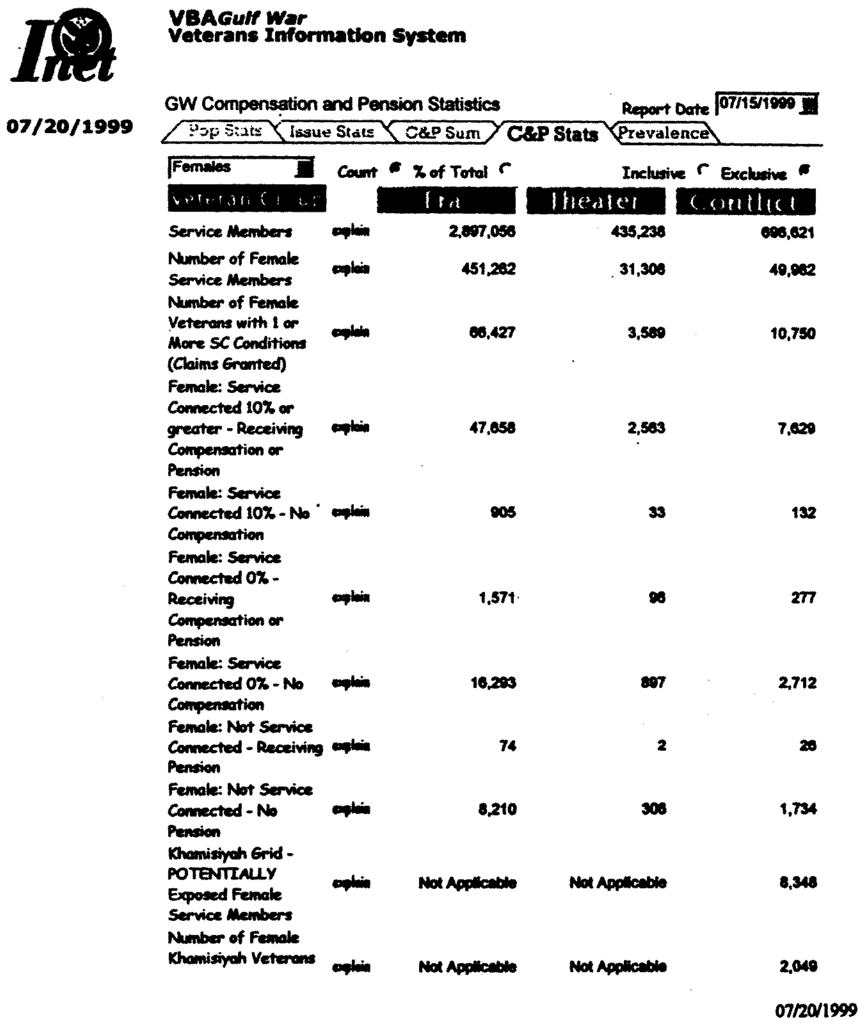
- Once a claim is adjudicated, subsequent processing action (usually 8 times monthly) must be accomplished to update the C&PMR file. Also, C&PMR listing of service connected disabilities is limited to 6 entries. As such, total number of service connected conditions relating to individual veterans may be understated. Data is specific to information in BIRLS at the time of the report. Once a claim is adjudicated, subsequent processing action must be accomplished to update the BIRLS files. BIRLS is continuously updating.
- Khamisiyah population Information is based on a DOD model of individuals presumed to have been physically located in designated area's following the munitions destruction occurring on 3/31/91. Warfare mobility and the uncertainty of actual location of individuals in a given area at the time of the event impacts identification accuracy.
- Al Jubayl population Information is based on DOD records of individuals presumed to have been physically located in the vicinity of Al Jubayl during the Gulf War.



VBA*Gulf War*
Veterans Information System

07/20/1999

GW Compensation and Pension Statistics

Report Date 07/15/1999

Females

Count ● % of Total ○ Inclusive ○ Exclusive ●

Veteran Cases		Era	Theater	Conflict
Service Members	explain	2,697,056	435,238	696,621
Number of Female Service Members	explain	451,262	31,306	49,982
Number of Female Veterans with 1 or More SC Conditions (Claims Granted)	explain	66,427	3,589	10,750
Female: Service Connected 10% or greater - Receiving Compensation or Pension	explain	47,658	2,563	7,629
Female: Service Connected 10% - No Compensation	explain	905	33	132
Female: Service Connected 0% - Receiving Compensation or Pension	explain	1,571	96	277
Female: Service Connected 0% - No Compensation	explain	16,293	897	2,712
Female: Not Service Connected - Receiving Pension	explain	74	2	26
Female: Not Service Connected - No Pension	explain	8,210	306	1,734
Khamisiyah Grid - POTENTIALLY Exposed Female Service Members	explain	Not Applicable	Not Applicable	8,348
Number of Female Khamisiyah Veterans	explain	Not Applicable	Not Applicable	2,049

07/20/1999

Conditions				
Khamisiyah Female - SC 10% Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	1,431
Khamisiyah Female - SC 10% Undiagnosed illness - Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	58
Khamisiyah Female - SC 10% No Compensation	explain	Not Applicable	Not Applicable	29
Khamisiyah Female - SC 10% Undiagnosed illness - No Compensation	explain	Not Applicable	Not Applicable	1
Khamisiyah Female - SC 0% Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	57
Khamisiyah Female - SC 0% Undiagnosed illness - Receiving Compensation or Pension	explain	Not Applicable	Not Applicable	5
Khamisiyah Female - SC 0% No Compensation	explain	Not Applicable	Not Applicable	532
Khamisiyah Female - SC 0% Undiagnosed illness - No Compensation	explain	Not Applicable	Not Applicable	4
Khamisiyah Female - NSC Receiving Pension	explain	Not Applicable	Not Applicable	3
Khamisiyah Female - NSC Undiagnosed illness - Receiving Pension	explain	Not Applicable	Not Applicable	54
Khamisiyah Female - NSC No Pension	explain	Not Applicable	Not Applicable	338
Khamisiyah Female - NSC Undiagnosed illness - No Pension	explain	Not Applicable	Not Applicable	101
Number of Female				

Veterans with 1 or More Undiagnosed SC Conditions	explain	6	18	297
Female SC 10% Undiagnosed illness - Receiving Compensation or Pension	explain	6	17	265
Female SC 10% Undiagnosed illness - No Compensation	explain	0	0	2
Female SC 0% Undiagnosed illness - Receiving Compensation or Pension	explain	0	1	19
Female SC 0% Undiagnosed illness - No Compensation	explain	0	0	11
Female NSC Undiagnosed illness - Receiving Compensation or Pension	explain	5	19	250
Female NSC Undiagnosed illness - No Compensation	explain	21	13	441

Data Sources:

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- VBA Pending Issue File
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- GW Al Jubayl Service Member population file

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- Khamisiyah population Information is based on a DOD model of individuals presumed to have been physically located in designated area's following the munitions destruction occurring on 3/31/91. Warfare mobility and the uncertainty of actual location of individuals in a given area at the time of the event impacts identification accuracy.

'Gulf War Veteran Statistics'

Report Date:	1999-07-15	
Report Type:	VA Compensation and Pension Stats.	[redacted]
Period Totals:	Exclusive Report Totals	[redacted]

	ERA	THEATER	CONFLICT
Veteran Group	Era	Theater	Conflict
Service Members	2,897,056	435,238	696,621
Estimated Veterans	2,661,725	258,008	579,710
Number of Veterans with 1 or More SC Conditions (Claims Granted)	437,065	39,908	132,891
Claims Pending	61,037	10,662	29,510
Service Connected 10% or greater - Receiving Compensation or Pension.	296,755	26,912	89,016
Service Connected 0% - Receiving Compensation or Pension	10,898	1,131	3,351
Service Connected 10% - No Compensation or Pension	11,730	494	2,214
Service Connected 0% - No Compensation or Pension	117,682	11,371	38,310
Not Service Connected - Receiving Pension	1,036	49	343
Not Service Connected - No Pension	46,773	3,424	19,260

'Gulf War Veteran Statistics'

Report Date:	1999-07-15
Report Type:	VA Khamisiyah Population C&P Stats.
Period Totals:	Exclusive Report Totals

	ERA	THEATER	CONFLICT
Veteran Group	Era	Theater	Conflict
Service Members	2,897,056	435,238	696,621
Estimated Veterans	2,681,725	258,008	579,710
Khamisiyah Grid - POTENTIALLY Exposed Service Members	Not Applicable	Not Applicable	99,719
Number of Khamisiyah Veterans with 1 or More SC Conditions	Not Applicable	Not Applicable	23,672
Khamisiyah - SC 10% Receiving Compensation or Pension	Not Applicable	Not Applicable	15,739
Khamisiyah - SC 10% Undiagnosed illness - Receiving Compensation or Pension	Not Applicable	Not Applicable	557
Khamisiyah - SC 0% Receiving Compensation or Pension	Not Applicable	Not Applicable	518
Khamisiyah - SC 10% Undiagnosed illness - No Compensation or Pension	Not Applicable	Not Applicable	5
Khamisiyah - SC 10% No Compensation or Pension	Not Applicable	Not Applicable	410
Khamisiyah - SC 0% Undiagnosed illness - Receiving	Not Applicable	Not Applicable	42

Compensation or Pension			
Khamisiyah - SC 0% No Compensation or Pension	Not Applicable	Not Applicable	7,005
Khamisiyah - SC 0% Undiagnosed illness - No Compensation or Pension	Not Applicable	Not Applicable	32
Khamisiyah - NSC Receiving Pension	Not Applicable	Not Applicable	71
Khamisiyah - NSC Undiagnosed illness - Receiving Compensation or Pension	Not Applicable	Not Applicable	654
Khamisiyah - NSC No Pension	Not Applicable	Not Applicable	3,732
Khamisiyah - NSC Undiagnosed illness - No Compensation or Pension	Not Applicable	Not Applicable	1,086

REPUBLICANS
[illegible]
CHIEF COUNSEL AND STAFF DIRECTOR

ONE HUNDRED FIFTH CONGRESS
BOB STUMP
CHAIRMAN
U.S. House of Representatives
COMMITTEE ON VETERANS' AFFAIRS
[illegible] CANNON HOUSE OFFICE BUILDING
Washington, DC 20515

DEMOCRATS
[illegible]

June 3, 1998

Honorable Togo D. West, Jr.
Secretary of Veterans Affairs
810 Vermont Avenue, N.W.
Washington, DC 20420

Dear Mr. Secretary:

As Congress continues to hear from Persian Gulf War veterans who believe their health care problems are of service origin, it has become increasingly apparent to us that the Department is too narrowly implementing the landmark legislation initiated in this Committee to provide compensation for these veterans.

The Persian Gulf War Veterans' Benefits Act (Public Law 103-446) in 1994, provided for the payment of compensation to Persian Gulf War veterans suffering from a chronic disability resulting from an undiagnosed illness (or combination of undiagnosed illnesses) which became manifest to a compensable degree within a period prescribed by regulation. VA regulations implementing that law, codified at 38 CFR section 3.317, effectively limit compensation to "illness...[which] by history, physical examination, and laboratory tests cannot be attributed to any known clinical diagnosis."

Neither the language of the law, nor its clear intent, compels so strict a limitation as that reflected above. I urge you to re-examine your authority under that law and amend this regulation in light of (1) the law's clear purpose, (2) what has been learned about Gulf War illnesses, and (3) the arbitrary and capricious results which flow from adjudications under this regulation. I believe such an analysis will lead you to conclude that the regulation should mandate compensation for illness manifested by symptoms which, after thorough examination, either (1) eludes diagnosis, or (2) if a diagnosis is rendered, attributes such symptoms to an ill-defined illness such as chronic fatigue syndrome or fibromyalgia.

Congress authorized compensation for certain chronic disabilities "resulting from an undiagnosed illness (or combination of undiagnosed illnesses)". One need not go beyond the face of the statute to question a regulation which in effect defines the term "undiagnosed illness" as one which cannot be attributed to any known clinical diagnosis. Literally, the regulation is so narrow as to rule out compensation even for an illness manifested by symptoms that could be attributed to a known diagnosis, even if no diagnosis is made. But to the extent that the Department reads the law as absolutely ruling out service-connection in any case in which a diagnosis has been made, it reads that law too narrowly.

Lest the intent of Congress in enacting the special compensation provision be thought in doubt, consider the congressional findings set forth in section 102 of the Act:

> "(2) Significant numbers of veterans of the Persian Gulf are suffering from illnesses, or are exhibiting symptoms of illness, that cannot now be diagnosed or clearly defined." (Emphasis added.)
>
> ***
>
> "(7) ...[V]eterans who are seriously ill as the result of such illnesses should be given the benefit of the doubt and be provided compensation benefits to offset the impairment in earnings capacities they may be experiencing."

As reflected in the above-quoted passages, and particularly the underscored phrase, Congress recognized that, because of the nature of the clusters of symptoms suffered by many Persian Gulf veterans, physicians were often either unable to identify and render a diagnosis, or faced an illness (or illnesses) which was not "clearly defined". Congress intended not only to provide a specific remedy, but signaled its intent that this new compensation policy be administered with the benefit of the doubt afforded the veteran. But in ruling out compensation under PL 103-446 in any case where the illness in question has been given a diagnosis is to ignore both the nature of the illnesses Congress sought to have VA compensate as well as the philosophy of benefits adjudication it sought to have the Department apply.

To illustrate, consider the case of two Persian Gulf War veterans who (1) have similar complaints (fatigue, difficulty in concentrating, musculo-skeletal pain, and gastro-intestinal problems); (2) first report these health care concerns three years after discharge from service; (3) provide similar in-theater histories as to Persian Gulf service; and (4) report "not feeling 100% after returning from the Gulf", suffering the above disabling symptoms for more than a year, and being unable to work for the last six months. After similar workups, veteran #1, examined at VAMC X, is diagnosed with chronic fatigue syndrome and provided symptomatic treatment. Veteran #2, examined at VAMC Y, is not given a diagnosis, but is provided the same symptomatic treatment for an "illness of undefined nature". Both veterans file claims for compensation. Veteran #1 is denied service connection for chronic fatigue syndrome on the basis that there is no documentation of illness in service and insufficient continuity of symptoms after service; PL 103-446 is deemed not to apply because the veteran does not have an undiagnosed illness. Veteran #2 is granted service connection for his undiagnosed illness under PL 103-446.

While hypothetical in nature, this illustration represents an all-too-plausible snapshot of the arbitrary nature of adjudicative decision-making under the Department's regulation. As reflected in the above hypothetical, veterans become either beneficiaries or victims of a capricious system if they are awarded or denied service connection based on the happenstance of which VA physician happens to examine or treat them. Yet the regulation fosters such caprice when decisions turn on whether a physician, confronted by an ill-defined symptom complex, employs a diagnosis like chronic fatigue syndrome or fibromyalgia, or simply acknowledges his or her uncertainty regarding what is an ill-defined health problem.

What is clear with respect to such symptom complexes is that they are poorly understood. As described in expert testimony presented to our Subcommittee on Health from Dr. Daniel J. Clauw, Chief of Rheumatology, Immunology, and Allergy at Georgetown University Medical Center, at a June 19, 1997 hearing, quoted below, these are ill-defined illnesses, and the line between those cases which result in a diagnosis and those which do not is also a very fine one. It is also understandable that some physicians, untrained in the area, would not employ a diagnosis for a poorly understood symptom complex. Yet a diagnosis like fibromyalgia or chronic fatigue syndrome, as understood in the developing medical literature, identifies precisely the kind of symptoms which were reported by veterans after the Gulf War and which prompted the enactment of P.L 103-446. Dr. Clauw's comments highlight the point:

> "I have been involved in both research and the clinical care of persons afflicted with a number of ill-defined and poorly understood medical conditions, which include fibromyalgia and chronic fatigue syndrome...[A]lthough these symptom complexes go by a variety of semantic terms, most involved in the study

> of these conditions feel that these conditions are one large spectrum of illness. The symptoms and findings in individuals with the Persian Gulf Syndrome are the same as those of persons labeled with these other conditions, except that the Persian Gulf Syndrome patients developed these problems during or after deployment to the Gulf War. Why are these illnesses not recognized, and difficult to diagnose? One of the reasons for incomplete recognition of these conditions is that this symptom complex is given many different names, and many different attributions. Another reason is that there are no blood tests or other diagnostic studies that are predictably abnormal in persons with this illness. Because of this, these conditions are diagnosed on the basis of symptoms, and by excluding other medical problems which can cause the same type of symptoms. Another significant problem with the recognition and acceptance of fibromyalgia and related conditions is that these illnesses in general have become known as 'psychosomatic' conditions. *All of these conditions are either triggered or exacerbated by a variety of physical, immune, or emotional stressors, and there is likely a common underlying cause or causes for this entire spectrum of illness. Unfortunately, the root causes for this spectrum of illness are not presently known.*"

(The Institute of Medicine's discussion of difficult-to-diagnose and ill-defined conditions in its January 1998 report on the "Adequacy of the Comprehensive Clinical Evaluation Program" is also illuminating.)

Accordingly, for the Department to adjudicate cases on the basis of a rigid distinction between "diagnosed" and "undiagnosed" conditions is to ignore altogether what we have come to learn about chronic fatigue syndrome, fibromyalgia and related ill-defined conditions. Continued reliance on the current regulation ignores that medicine does not fully understand these ill-defined conditions and that physicians may or may not diagnose them. As is apparent from the literature on these illnesses, however, they present with many of the same symptoms which have been described in Persian Gulf veterans from the earliest reports and which were the subject of Congress' effort to service-connect veterans who suffer from symptoms of illness which cannot be clearly defined. Thus, for the regulation which implements PL 103-446 to effectively rule out service-connection under that law in any case in which a VA physician happens to assign a diagnostic label associated with an ill-defined illness is to frustrate the purposes of this law, and to raise a serious question of deprivation of due process.

I trust you will carefully consider these concerns in reviewing the applicable VA regulation.

Sincerely,

BOB STUMP
Chairman

THE UNDER SECRETARY OF VETERANS AFFAIRS FOR BENEFITS
WASHINGTON, D.C. 20420

OCT 14 1998

The Honorable Bob Stump
Chairman
Committee on Veterans' Affairs
U. S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

This is in response to your letter regarding compensation for Gulf War veterans who are suffering from disability due to undiagnosed illnesses.

Your letter suggested that regulations published by VA too narrowly implement the authority of 38 U.S.C. § 1117 to compensate for chronic disability resulting from an undiagnosed illness (or combination of undiagnosed illnesses) that became manifest during active service in the Southwest Asia theater of operations during the Gulf War or became manifest to a degree of at least 10 percent within a presumptive period prescribed by VA. Specifically, you suggested that our regulations may improperly preclude compensation for illness manifested by symptoms that could be attributed to any known diagnosis, regardless of whether such a diagnosis has been made in a particular veteran's case. Additionally, you suggested that VA's regulation "should mandate compensation for illness manifested by symptoms which, after thorough examination, either (1) eludes diagnosis, or (2) if a diagnosis is rendered, attributes such symptoms to an ill-defined illness such as chronic fatigue syndrome or fibromyalgia."

Because your letter raised issues that required legal interpretation our General Counsel reviewed the language of the law and the regulation and furnished a legal opinion as to whether regulatory amendment was required based on the questions you raised. This legal opinion has been issued as a General Counsel Precedent Opinion (VAOPGCPREC 8-98) dated August 3, 1998.

In brief, the General Counsel has held that compensation may be paid under 38 C.F.R. § 3.317 for disability which cannot, based on the facts of the particular veteran's case, be attributed to any known clinical diagnosis, notwithstanding the fact that the signs and symptoms exhibited by the veteran could conceivably be attributed to a known clinical diagnosis under other circumstances not presented in the particular veteran's case.. Further, the precedent opinion held that section 1117(a) of title 38, United States Code, authorizes service connection on a presumptive basis only for disability arising in Gulf War veterans due to "undiagnosed illness" and may not be construed to authorize presumptive service connection for any diagnosed illness, regardless of whether the diagnosis may be characterized as poorly defined.

A copy of the General Counsel Opinion (VAOPGCPREC 8-98) is attached for your information. It provides a more specific response to the questions you have raised.

Based on this opinion, I believe it proper to continue to rely upon case-by-case reviews of evidence to determine whether a veteran's disability has been attributed to a known clinical diagnosis. Study of illness in Gulf War veterans is an ongoing process, and we certainly expect to learn more about undiagnosed illness as research continues. Of course, should additional medical and scientific research indicate that a rational basis exists for establishing additional presumptions of service connection for specific conditions that are currently classified as diagnosed illnesses, we will review our rules for presumptive service connection.

Your interest in this issue is appreciated.

Sincerely,

Joseph Thompson.

Attachment

GC HOME GC OPINIONS VA HOME WELCOME WHAT'S NEW BENEFITS FACILITIES SPECIAL PROGRAMS
ORGANIZATION DATA FORMS MEDICAL SERVER LINKS SEARCH IG Hotline VA Electronic Reading Room Contact VA
FAQ

Compensation for Undiagnosed Illness Under 38 U.S.C. § 1117 and 38 C.F.R. §3.317

1. Date: 8/3/ 1998
2. Title: Compensation for Undiagnosed Illness Under 38 U.S.C. § 1117 and 38 C.F.R. §3.317
3. Citation: VAOPGCPREC 8-98
4. Pubdate:
5. Subject Code:
    1. 08-12 CLASSES OF PERSONS ENTITLED TO BENEFITS-PERSIAN GULF WAR VETS
    2. 09-02 SERVICE CONNECTION-COMPENSATION
    3. 01-17 REGULATIONS-38 C.F.R. SECTION 3.317
6. Mail Code: 20
7. Appendix: 022
8. Backup Documents
    1. Official Opinion VIEW DOCUMENT
9. Text:

Department of Veterans Affairs Memorandum

Date: August 3, 1998 VAOPGCPREC 8-98

From: Acting General Counsel (022)

Subj: Compensation for Undiagnosed Illness Under 38 U.S.C. § 1117 and 38 C.F.R. § 3.317

To: Under Secretary for Benefits (20)

QUESTIONS PRESENTED:

a. Does 38 C.F.R. § 3.317 preclude compensation for an illness manifested by symptoms that could, in some circumstances, be attributable to a known clinical diagnosis, even if no such diagnosis has been made with respect to the individual seeking compensation?

b. May the Department of Veterans Affairs (VA) pay compensation under 38 U.S.C. § 1117 for disability manifested by symptoms that either elude diagnosis or are attributed to a poorly-defined disease such as chronic fatigue syndrome or fibromyalgia?

DISCUSSION:

1. Section 1117(a) of title 38, United States Code, authorizes VA to pay service-connected disability compensation "to any Persian Gulf veteran suffering from a chronic disability resulting from an undiagnosed illness (or combination of undiagnosed illnesses)" that became manifest during active service in the Southwest Asia theater of operations during the Persian

Gulf War or became manifest to a degree of 10 percent within a presumptive period prescribed by VA. Section 1117(c) of title 38 directs VA to prescribe regulations to carry out that authority which include, among other things, "[a] description of the illnesses for which compensation under [section 1117] may be paid." In February 1995, VA issued 38 C.F.R. § 3.317 to implement the authority of 38 U.S.C. § 1117. Section 3.317(a)(1) provides, in pertinent part:

(a)(1) . . . VA shall pay compensation in accordance with chapter 11 of title 38, United States Code, to a Persian Gulf veteran who exhibits objective indications of chronic disability resulting from an illness or combination of illnesses manifested by one or more signs or symptoms such as those listed in paragraph (b) of this section, provided that such disability:

. . . .

(ii) By history, physical examination, and laboratory tests cannot be attributed to any known clinical diagnosis.

Section 3.317(b) provides a non-exclusive list of thirteen signs or symptoms which may be manifestations of undiagnosed illness.

2. VA has received a letter from the Chairman of the House Committee on Veterans' Affairs expressing the view that 38 C.F.R. § 3.317 is, in two respects, an unduly restrictive interpretation of the statutory authority conferred by 38 U.S.C. § 1117. The Chairman states, first, that section 3.317(a)(1), read literally, would improperly preclude compensation for an illness manifested by symptoms that could be attributed to a known diagnosis, even if no diagnosis had been made with respect to the particular veteran seeking compensation. Second, the Chairman asserts that section 3.317(a)(1) improperly precludes compensation under 38 U.S.C. § 1117 in all cases where a diagnosis has been made for the illness in question. With regard to the second contention, the Chairman asserts that the regulations should mandate compensation for illness manifested by symptoms which either elude diagnosis or, if a diagnosis is rendered, are attributed to a poorly-defined disease such as chronic fatigue syndrome or fibromyalgia.

3. With regard to the first issue, we understand the question presented to be whether 38 C.F.R. § 3.317 precludes compensation pursuant to section 1117 when the signs or symptoms exhibited by a veteran could, under some circumstance, be attributed to a known clinical diagnosis. For example, 38 C.F.R. § 3.317(b) lists "joint pain" as one of the signs or symptoms which may be manifestations of an undiagnosed illness. VA's schedule of rating disabilities, however, recognizes that joint pain may also be a symptom of arthritis, a "known clinical diagnosis." See 38 C.F.R. § 4.71a, Diagnostic Code 5003. Accordingly, the question is whether section 3.317(a)(1)(ii) would preclude compensation under section 1117 for a Persian Gulf veteran exhibiting joint pain, because joint pain can be attributed to arthritis, regardless of whether the particular veteran's joint pain has actually been attributed to arthritis. We conclude that the regulation does not impose such a restriction. Rather, the language of the regulation indicates that the pertinent inquiry is whether. under the circumstances of the particular veteran's case, the signs or symptoms manifested by the veteran can be attributed to a recognized disease or injury suffered by the veteran.

4. Section 3.317(a)(1) mandates compensation to a Persian Gulf veteran "who exhibits objective indications of chronic disability resulting from an illness or combination of illnesses manifested by one or more signs or symptoms . . . , provided that such disability . . . cannot be attributed to any known clinical diagnosis." (Emphasis added.) The words "such disability," as used in the regulation, refer to the disability exhibited by the veteran seeking compensation, as manifested by the veteran's signs or symptoms. The requirement that the veteran's disability "cannot be attributed to any known clinical diagnosis," on its face, requires a determination as to the nature and cause of that particular veteran's disability, based on the evidence in the particular case. If a claimant suffers disability manifested by a sign or symptom. such as joint pain, which cannot. in that veteran's case, be attributed to a known clinical diagnosis, such as arthritis, the requirement in 38 C.F.R. § 3.317(a)(1)(ii) will be met and compensation may be

paid if the veteran satisfies the other statutory and regulatory criteria. It is, therefore, irrelevant whether the signs or symptoms exhibited by the veteran could be attributed to a known clinical diagnosis under a different, hypothetical set of facts which are not actually present in the veteran's case.

5. Under 38 C.F.R. § 3.317(a)(1)(ii), the determination as to whether a veteran's disability can "be attributed to any known clinical diagnosis" must be based on "history, physical examination, and laboratory tests." The phrase "history, physical examination, and laboratory tests," as used in that regulation, is most naturally read to refer to the particular veteran's history, and to physical examination and laboratory tests conducted with respect to the particular veteran. VA regulations provide that each veteran's disability must be evaluated in relation to its history and to the findings on physical examinations of the veteran. 38 C.F.R. §§ 4.1 and 4.2. VA's schedule of disability ratings indicates that the diagnosis of certain conditions may depend upon complete medical examination of the particular veteran's disability. See, e.g., 38 C.F.R. § 4.42. Accordingly, 38 C.F.R. § 3.317(a)(1)(ii) requires only that the history, physical examinations, and laboratory findings regarding a particular veteran not provide a basis for attributing such veteran's signs or symptoms to any known clinical diagnosis. The fact that particular signs or symptoms could be attributed to a known clinical diagnosis under other circumstances not presented in the particular veteran's case would not preclude compensation under that regulation.

6. The second question presented pertains to whether VA has authority to pay compensation under 38 U.S.C. § 1117 for disability manifested by symptons which either elude diagnosis or, if diagnosed, are attributed to a poorly-defined disease such as chronic fatigue syndrome or fibromyalgia. As used in the opinion request, the concept of poorly-defined diseases apparently refers to diseases which are recognized by the medical and scientific community as known and diagnosable diseases, but which are defined in terms that may arguably be characterized as vague, general, or controversial and, therefore, may not be diagnosed consistently by different physicians treating similarly-situated patients. The opinion request and the letter from a member of Congress referenced in the opinion request identify chronic fatigue syndrome and fibromyalgia as examples of poorly-defined diseases. VA has adopted provisions in its schedule for rating disabilities setting forth the identifying criteria for those two conditions. Chronic fatigue syndrome is a condition of unknown etiology which often involves multiple body systems. See 59 Fed. Reg. 60,901 (1994). Under VA's rating schedule, diagnosis of chronic fatigue syndrome requires the following three elements: (1) the new onset of debilitating fatigue severe enough to reduce daily activity to less than 50 percent of the usual level for at least six months; (2) the exclusion, by history, physical examination, and laboratory tests, of all other clinical conditions that may produce similar symptoms; and (3) the presence of at least six of ten other specified symptoms. 38 C.F.R. § 4.88a. "Fibromyalgia is a syndrome of chronic, widespread musculoskeletal pain associated with multiple tender or 'trigger' points, and often with multiple somatic complaints." 61 Fed. Reg. 20,438, 20,439 (1996). VA's rating schedule indicates that symptoms associated with fibromyalgia may include fatigue, sleep disturbance, stiffness, paresthesias, headache, irritable bowel symptoms, depression, anxiety, and Raynaud's-like symptoms. 38 C.F.R. § 4.71a, Diagnostic Code 5025.

7. VA has authority under 38 U.S.C. § 1110 to pay compensation for disability due to a diagnosed disease, such as chronic fatigue syndrome or fibromyalgia, regardless of whether the disease may be characterized as poorly defined. However, in the absence of an applicable presumption of service connection, veterans seeking compensation for such disability must submit evidence that their diagnosed disease was incurred in or aggravated by service. In contrast, 38 U.S.C. § 1117(a) and 38 C.F.R. § 3.317(a) establish a presumption of service connection for Persian Gulf veterans who manifest disability due to an undiagnosed illness to a 10-percent degree prior to December 31, 2001. Accordingly, the issue implicated by the second question is whether the presumption of service connection under 38 U.S.C. § 1117(a) and 38 C.F.R. § 3.317(a) may be applied to diseases which have been diagnosed, but which are attributed to a poorly-defined disease, such as chronic fatigue syndrome or fibromyalgia.

8. On its face, 38 U.S.C. § 1117(a) confers no authority to grant presumptive service connection for any diagnosed disease, regardless of whether the disease may be characterized as poorly defined. Section 1117(a) authorizes VA to pay compensation "to any Persian Gulf veteran suffering from a chronic disability resulting from an undiagnosed illness (or combination of undiagnosed illnesses)" which became manifest in service in the Southwest Asia theater or within a prescribed presumptive period. (Emphasis added.) The term "undiagnosed illness," read literally, means an illness which has not been diagnosed. It is well established that the plain meaning of a statute's language is controlling except in "'rare and exceptional circumstances,' when a contrary legislative intent is clearly expressed." Ardestani v. Immigration and Naturalization Serv., 502 U.S. 129, 135-36 (1991) (citation omitted) (quoting Rubin v. United States, 449 U.S. 424, 430 (1981)).

9. We have found no indication that applying 38 U.S.C. § 1117(a) in accordance with its plain meaning would contravene any clearly expressed legislative intention. The legislative history indicates that the purpose of 38 U.S.C. § 1117(a) is to authorize compensation for disability due to illnesses which cannot be diagnosed. The provisions codified in section 1117 derived from H.R. 4386, 103d Cong., 2d Sess. (1994), provisions of which were incorporated, with certain amendments, into the Veterans' Benefits Improvements Act of 1994, Pub. L. No. 103-446, § 106, 108 Stat. 4645, 4650. The legislative history of H.R. 4386 indicates that the provisions in section 1117 were enacted in response to a determination by VA that it lacked authority under 38 U.S.C. § 1110 to pay compensation for disability in cases where the underlying illness could not be diagnosed and, therefore, the disability could not be attributed to any disease or injury. H.R. Rep. No. 669, 103d Cong., 2d Sess. 6 (1994). In explaining the purpose of this provision, the Committee on Veterans' Affairs of the House of Representatives stated:

The primary purpose is to provide disability compensation on a presumptive basis to certain veterans of the Persian Gulf War who suffer chronic disabilities resulting from undiagnosed illnesses attributed to their service in the Persian Gulf. The Secretary of Veterans Affairs has indicated that current law does not permit the VA to grant service connection in these cases due to the absence of a diagnosis of the underlying illness. As indicated in a June 10, 1994, memorandum to the Secretary of Veterans Affairs [VAOPGCADV 26-94 (O.G.C. Advis. 26-94)], it is the opinion of the VA's General Counsel that "because the VA is authorized to compensate only for disease-caused or injury-caused disabilities, unless the VA can ascribe a disability to a disease or injury, there is no authority to compensate. The pending legislation supplies that needed additional authority."

H.R. Rep. No. 669, 103d Cong. at 6. The legislative history indicates that 38 U.S.C. § 1117 was intended to remedy the situation in which the absence of a diagnosis precluded an award of compensation under 38 U.S.C. § 1110. That purpose is consistent with the plain language of section 1117(a), which authorizes compensation only for "undiagnosed illness."

10. To the extent that the legislative history discusses service connection for diagnosed illnesses, it merely reflects a congressional understanding that VA had authority under existing law to provide compensation for such illnesses and to prescribe rules for adjudication of claims based on such illnesses. At a June 9, 1994, hearing on H.R. 4386, the bill's chief sponsor stated that, "[v]eterans whose sicknesses are diagnosed are eligible for compensation. The law provides benefits for these veterans. I think we have to provide for Persian Gulf veterans who are suffering from undiagnosed illnesses, who are unable to work." Hearing Before the Subcommittee on Compensation, Pension and Insurance of the Committee on Veterans' Affairs, House of Representatives, 103d Cong., 2d Sess. 9 (June 9, 1994) (statement of Cong. Montgomery). In its report on H.R. 4386, the House Committee on Veterans' Affairs discussed the similarities between chronic fatigue syndrome and the undiagnosed illnesses of Persian Gulf veterans and noted that, "[a]lthough the etiology of [chronic fatigue syndrome] currently is not known, the Secretary of Veterans Affairs testified that [chronic fatigue syndrome] will be added to the VA rating schedule and guidance has been established for adjudication of [chronic fatigue syndrome] claims." H.R. Rep. No. 669, 103d Cong. at 20-21. These statements are

consistent with the conclusion that Congress intended to authorize compensation under 38 U.S.C. § 1117 only for illnesses which could not be diagnosed and did not intend to alter VA's existing authority to pay compensation for diagnosed illnesses. In discussing chronic fatigue syndrome, the House Committee on Veterans' Affairs appears to have acknowledged that compensation for that condition would be governed by existing law and did not indicate any intent that a presumption of service connection be established for that or any other diagnosed condition. Thus, the legislative history of Pub. L. No. 103-446 does not provide the sort of clear evidence of legislative intent which would be necessary to permit VA to depart from the plain meaning of section 1117(a).

11. The Chairman's letter referenced in the opinion request refers to the statement of congressional findings in section 102(2) of Pub. L. No. 103-446, which states:

Significant numbers of veterans of the Persian Gulf War are suffering from illnesses, or are exhibiting symptoms of illness, that cannot now be diagnosed or clearly defined. As a result, many of these conditions or illnesses are not considered to be service connected under current law for purposes of benefits administered by [VA].

Pub. L. No. 103-446, § 102(2), 108 Stat. at 4647 (emphasis added); see also Pub. L. No. 103-446, § 103(1), 108 Stat. at 4648 (referring to "illnesses that cannot now be diagnosed or defined"). The Chairman suggests that the phrase "or clearly defined" reflects a congressional intent to provide compensation for illnesses which have been diagnosed under a disease category which is not clearly defined, such as chronic fatigue syndrome or fibromyalgia. In our opinion, the language of section 102(2) does not clearly convey such an intent. The interpretation advanced by the Chairman is based on the view that the phrase "cannot now be diagnosed or clearly defined" refers to two classes of illnesses, i.e., those which cannot be diagnosed and those which, although they can be diagnosed, cannot be clearly defined. However, that phrase may also be interpreted as referring to a single class of illnesses, i.e., those which can neither be diagnosed nor clearly defined. If the latter meaning was intended, then section 102(2) would clearly be consistent with the language of 38 U.S.C. § 1117(a) authorizing compensation only for disability due to undiagnosed illness.

12. In its report on H.R. 4386, the House Committee on Veterans' Affairs stated that, "[t]he National Institutes of Health Technology Assessment Workshop on the Persian Gulf Experience and Health (NIH Workshop), which met April 27 through April 29, 1994, was unable to develop a working case definition for the so-called 'Persian Gulf Syndrome'." H.R. Rep. No. 669, 103d Cong. at 7. The final statement of the referenced NIH Workshop, included as an appendix to H.R. Rep. No. 669, stated that, "[i]t appears from the information presented that some Persian Gulf veterans have symptoms that are not readily explained by using established disease categories. Under these circumstances, it would be helpful to establish a single case definition to assist in evaluating and managing these veterans." H.R. Rep. No. 669, 103d Cong., 2d Sess. at 51. However, the NIH Workshop panel which prepared the statement concluded that a case definition could not be established due to the lack of data. Id. The NIH Workshop report indicated that the "undiagnosed illnesses" exhibited by Persian Gulf veterans could not at that time be clearly defined by any single set of descriptive criteria. Id. Viewed in relation to this history, the statement in section 102(2) that certain illnesses "cannot now be diagnosed or clearly defined" appears to state only that such illnesses elude both diagnosis and definition and, therefore, does not appear to refer to illnesses which have been diagnosed under arguably ill-defined disease categories. Although this legislative history does not conclusively resolve the meaning of section 102(2) of Pub. L. No. 103-446, it suggests an interpretation of that provision which is entirely consistent with the plain meaning of 38 U.S.C. § 1117(a).

13. Several provisions of Pub. L. No. 103-446 suggest that Congress intended VA would work toward developing diagnoses for the illnesses suffered by Persian Gulf War veterans and improve the process of reaching diagnoses of particular veterans' illnesses. See Pub. L. No. 103-446, §§ 103(2) (stating purpose to develop definitions or diagnoses of illnesses), 104(a) (development of medical evaluation protocol to ensure appropriate diagnosis), 104(a)(4)(A)

(diagnostic tests at non-VA facilities), and 104(c) (directing development of definitions or diagnoses), 108 Stat. at 4649-50. At the same time, Congress authorized payment of compensation to veterans suffering from undiagnosed illness. Pub. L. No. 103-446, § 106, 108 Stat. at 4650; see also Pub. L. No. 103-446, § 103(1), 108 Stat. at 4648 (stating purpose to provide compensation to veterans whose disabilities "cannot now be diagnosed or defined"). These provisions suggest an intention to continue efforts to diagnose illnesses suffered by Persian Gulf veterans and pay compensation to such veterans by existing means, while at the same time providing for payments, under section 1117, to veterans whose illnesses are not yet capable of diagnosis.

14. VA has authority to implement 38 U.S.C. § 1117 by adopting regulations which are necessary or appropriate to carrying out that statute, provided that such regulations are consistent with section 1117. See 38 U.S.C. § 501(a). Further, any such regulations must be supported by a rational basis. See Motor Vehicle Mfrs. Ass'n, Inc. v. State Farm Mutual Auto. Ins. Co., 463 U.S. 29, 43 (1983). Because 38 U.S.C. § 1117(a) authorizes compensation only for disability due to "undiagnosed illness," nothing in that provision would authorize VA to provide presumptive service connection for diagnosed illness. See Manhattan Gen. Equip. Co. v. Commissioner of Internal Revenue, 297 U.S. 129, 134 (1936) ("A regulation which . . . operates to create a rule out of harmony with the statute, is a mere nullity."). However, VA may have authority to adopt reasonable regulations governing the determination as to what constitutes a diagnosis for purposes of section 1117(a). If, for example, there were a rational basis for concluding that some terms employed by physicians do not constitute diagnoses for purposes of section 1117(a) (e.g., because those conditions are not generally recognized in the medical community), then VA would have authority to adopt a regulation providing that the use of such terms would not constitute a diagnosis which would preclude compensation under section 1117(a).

15. In adopting rating-schedule provisions for chronic fatigue syndrome and fibromyalgia, VA appears to have already concluded that those conditions constitute recognized diagnoses. Further, in adopting regulations to implement 38 U.S.C. § 1117, VA rejected the suggestion, submitted during the comment period, that VA adopt a regulatory definition as to what constitutes a "known clinical diagnosis." In rejecting that suggestion, VA stated:

> The concept of what constitutes a "known clinical diagnosis" is not such a matter of uncertainty within the medical community as the commenter has implied. Examining physicians routinely determine whether or not an illness is part of a disease process that follows a particular clinical course which can be generally predicted. If the physician is unable to attribute a disability to such a known clinical diagnosis, he or she would routinely include a statement to that effect on the examination report. In the event of conflicting findings, it would be incumbent upon VA to resolve the issue on the basis of all medical evidence of record.

60 Fed. Reg. 6660, 6662 (1995). It appears that VA has opted to rely upon case-by-case determinations, rather than rulemaking, to determine whether a veteran's disability has been attributed to a known clinical diagnosis. We are aware of no basis for questioning VA's determination that chronic fatigue syndrome and fibromyalgia are recognized diagnoses, or its decision not to adopt a regulatory definition of "known clinical diagnosis." Our conclusion that VA has authority to issue a rule defining what constitutes a diagnosis for purposes of 38 U.S.C. § 1117(a) is not intended to imply any view as to whether VA should issue such a rule.

16. Finally, although we conclude that 38 U.S.C. § 1117(a) does not authorize VA to grant presumptive service connection for diagnosed illnesses, we note that VA has authority under 38 U.S.C. §§ 501(a) and 1110 to adopt reasonable presumptions of service connection. See Chemical Mfrs. Ass'n v. Department of Transp., 105 F.3d 702, 705 (D.C. Cir. 1997) ("It is well settled that an administrative agency may establish evidentiary presumptions."). Generally, an agency may establish a presumption only if there is "a sound and rational connection between the proved and inferred facts." Chemical Mfrs. Ass'n, 105 F.3d at 705 (citing, among other authorities, NLRB v. Baptist Hosp., Inc., 442 U.S. 773, 787 (1979)). Pursuant to sections 501

(a) and 1110, VA would be authorized to adopt presumptions of service connection for specific diagnosed conditions manifested by Persian Gulf veterans, if it is determined that a rational basis exists for establishing such presumptions. Again, we express no view as to whether such presumptions are warranted.

HELD:

a. Compensation may be paid under 38 C.F.R. § 3.317 for disability which cannot, based on the facts of the particular veteran's case, be attributed to any known clinical diagnosis. The fact that the signs or symptoms exhibited by the veteran could conceivably be attributed to a known clinical diagnosis under other circumstances not presented in the particular veteran's case does not preclude compensation under section 3.317.

b. Section 1117(a) of title 38, United States Code, authorizes service connection on a presumptive basis only for disability arising in Persian Gulf veterans due to "undiagnosed illness" and may not be construed to authorize presumptive service connection for any diagnosed illness, regardless of whether the diagnosis may be characterized as poorly defined.

John H. Thompson

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SUBCOMMITTEE ON BENEFITS

HEARING ON PERSIAN GULF WAR VETERANS

OPENING STATEMENT OF THE HONORABLE BOB FILNER, RANKING DEMOCRATIC MEMBER

OCTOBER 26, 1999

Thank you, Mr. Chairman. I am pleased that today's hearing will examine claims filed by Gulf War veterans for compensation of disabilities associated with their Gulf War service. Over 90% of the men and women who served during the Gulf Conflict were under thirty years of age when they went to the Gulf. All were presumably in good or excellent health. Yet, after their Gulf service, many veterans have complained of serious and unexplainable illnesses.

These veterans are frustrated by unsuccessful efforts to find the causes and cures of these illnesses. They are frustrated when almost **three out of every four** claims filed with the VA for service-connected compensation benefits, related to an undiagnosed disability, are denied. They are frustrated when the various symptoms they experience are given multiple diagnostic labels without adequate attention to a possible underlying disease. I share their frustration.

The 103rd Congress recognized that Gulf War veterans were suffering from illnesses that could not be "diagnosed **or clearly defined**." Public Law 103-446 was enacted with the specific statutory purpose of providing "compensation to Persian Gulf War veterans who suffer disabilities resulting from illnesses that cannot now be diagnosed **or defined**, and for which other causes cannot be identified."

Unfortunately, VA's interpretation of this law has been narrow and restrictive.

In June of 1998, our Committee Chairman, Bob Stump wrote to Secretary West specifically calling the Secretary's attention to Congress' express intent to compensate Gulf War veterans who suffer from illnesses which cannot be **clearly defined**. VA's response was a General Counsel Opinion asserting that VA had no authority to compensate for poorly defined illnesses.

I find this response highly offensive and disrespectful. Public Law 103-446 contained specific findings that Gulf War veterans were suffering from illnesses or exhibiting symptoms of illness that cannot be diagnosed **or clearly defined**. Public Law 103-669 was passed **specifically with the purpose** of authorizing VA to provide "compensation to Persian Gulf War veterans who suffer disabilities resulting from illnesses that cannot now be diagnosed **or defined**, and for which **other causes cannot be identified**." In my view, VA has failed to fully implement this law.

I continue to hear stories of seriously ill Gulf war veterans, both when I am at home in San Diego and here in Washington. I continue to hear of barriers to obtaining compensation and confusion as to whether certain symptoms are attributable to a diagnosed or an undiagnosed illness. In some cases it appears as if claims are being denied because, rather than looking at the veteran as a whole and considering whether or not the various symptoms may be due to a yet undefined medical problem, each symptom is given a diagnostic label and the claim is denied.

For example, a veteran with serious gastrointestinal problems related to newly acquired intolerance for milk and other foods may be denied compensation because the "milk intolerance" is considered to be a "diagnosis" and, therefore, ineligible for compensation under the undiagnosed illness provision.

Are there difficulties in characterizing certain signs and symptoms as diagnosed or undiagnosed or poorly defined which need to be clarified by legislation? Why has VA interpreted the term undiagnosed illness so narrowly?
Are physicians examining Gulf War veterans improperly, diagnosing numerous signs and symptoms without considering that they may be related to an underlying but, as yet, unidentified disease mechanism? Why has there been no research focusing specifically on the more than

11,000 Gulf veterans who have sought compensation for Gulf War related undiagnosed illnesses?

As a former professor, who taught the history of science, I am hopeful that the physicians testifying at today's hearing can shed some light on the medical problems experienced by our Gulf veterans. I am also hopeful they will provide some insight into the vexing problem of attributing their various symptoms to an undiagnosed or poorly-defined condition rather than a diagnosed illness which results in the denial of the claim.

I urge the VA, as it continues to study the causes and potential cures for these illnesses, to look on the doorstep of the Veterans Benefits Administration. There is a cohort of veterans who have claimed undiagnosed illnesses sitting there. It is possible that a case controlled study of these veterans might provide the best clues to illnesses which are relatively rare even in the Gulf War veteran population. Listening carefully to these veterans may yet provide the elusive answers we all seek to appropriately compensate and treat some of our most disabled veterans.

I look forward to hearing from our witnesses today.

OPENING STATEMENT OF THE HONORABLE LANE EVANS SUBCOMMITTEE ON BENEFITS PERSIAN GULF CLAIMS

October 26, 1999

I would like to thank the Chairman of the Subcommittee, Mr. Quinn, and the Ranking Member, Mr. Filner, for holding this timely hearing on compensation claims filed by our Gulf War veterans.

I am pleased that the Veterans' Benefits Administration, under Joe Thompson's leadership, has improved its ability to provide the Committee with better information concerning the claims filed by Gulf War veterans.

I remain concerned that many Gulf veterans are still having their claims denied, particularly claims associated with undiagnosed or poorly defined disabilities. I am also concerned that there has been little analysis and research involving the various groups of veterans who have filed claims related to undiagnosed illnesses.

My staff has recently updated the report issued in 1998 concerning the disposition of these claims. I request that this updated report be included in the record of today's hearing.

VBA's data shows that:

- Veterans who were potentially subject to toxic agents at Al Jubayl and Khamisiyah are more likely to file a claim for service-connected disability benefits than other veterans serving during the Conflict or in the Gulf after July 31, 1991.

- Women service members in all groups who served in the Gulf are more likely to be service-connected for an undiagnosed illness than their male counterparts.

- Khamisiyah veterans are more likely to be receiving a disability pension based on a permanent and total disability which VA has determined is unrelated to military service than other Gulf veterans.

Does this suggest that some mechanism associated with the conflict period is responsible for these illnesses?

Why are Khamisiyah veterans almost twice as likely to be permanently and totally disabled than other Conflict veterans?

Women veterans in all groups have a higher rate of compensable service-connected undiagnosed illnesses than their male counterparts. Is there some explanation for this?

While today's hearing may not provide answers to these questions, I hope that it will focus attention on these findings.

Thank you, Mr. Chairman. I look forward to this morning's testimony.

Congressman Silvestre Reyes
Statement
House Veterans' Affairs Benefits Subcommittee
Hearing on Persian Gulf War Veterans Issues

October 26, 1999

- **Mr. Chairman, I want to thank you for scheduling today's hearing.**
- **The current status of our Persian Gulf War veterans is something that we must continuously monitor.**
- **In my view as part of our commitment to our nation's veterans we must continuously monitor the procedure for assessing their claims, and identify the degree of progress in analyzing, researching and ultimately determining the cause of their illnesses.**
- **These veterans are suffering from multiple ailments with an inability through current science to accurately determine their cause and diagnosis.**
- **After all of the experience of our nation in dealing with prior veterans, we must and should continue to improve our service to these men and women who served in this conflict.**
- **While current law provides a presumption for Persian Gulf War veterans who suffer disabilities from illnesses**

that cannot be diagnosed, too many of our veterans are denied because of a narrow interpretation of this law.

- **We know from our experience with Agent Orange that we should not discount or minimize the claims of our veterans.**

- **In this regard, I am pleased that the VBA has improved the processing of Gulf War claims, and I commend Under Secretary Thompson.**

- **But we must continue to do even better, since the number of denials and reverse findings after appeal is significant.**

- **Furthermore, perhaps a legislative remedy is required since our obligation to our veterans is should not be reduced through narrow interpretations.**

- **Moreover, I believe that the Veterans Health Administration must focus additional research on veterans who file claims for benefits based upon undiagnosed illnesses.**

- **Finally, I am extremely concerned with regard to the recent VA report showing an increased percentage of undiagnosed illness and total disability with regard to Veterans at Al Jubayl, Saudi Arabia and Khamisayah,**

and higher numbers of service connection for undiagnosed illness among our female Gulf War Veterans.

- **These disparities provide further justification for increased analysis and research into the possible cause and effect for these differences.**

- **This hearing, as with the many others we have held previously regarding our Gulf War Veterans, is important and should compel us to strengthen our efforts to find answers for our Gulf War veterans.**

- **I therefore look forward to hearing from today's witnesses and welcome their testimony.**

- **Thank you, Mr. Chairman.**

Statement of
Joseph Thompson
Under Secretary for Benefits
Department of Veterans Affairs
Before the
House Committee on Veterans' Affairs
Subcommittee on Benefits
October 28, 1999

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to testify today on Gulf War veterans' issues. I am pleased to be here with you to provide a status report on the adjudication of Gulf War veterans' claims and to discuss the efforts the Department has made to improve Gulf War programs.

I last testified before this Subcommittee on Gulf War issues in February 1998. Since that time, I believe that the Department has made progress in the processing of Gulf War claims, in the identification of initiatives which will aid in the processing of all claims, including those for Gulf War, and in collaboration between the health and benefits components of the VA with regard to Gulf War issues.

You have asked that our testimony include information on the adjudication of Gulf War veterans' claims, including an update on the second review of Gulf War claims; the most common illnesses claimed, and any trends or patterns that have emerged in these claims; initiatives that will aid in claims processing; and the interaction and coordination efforts between the Veterans Health Administration (VHA) and the Veterans Benefits Administration (VBA) which would assist in the adjudication of Gulf War veterans' claims. The rest of my testimony will address these specific issues.

Claims Processing

As you know, in September 1994, we established four Area Processing Offices to handle Gulf War claims because we wanted to establish a process under which a small number of regional offices could develop expertise in complex adjudicative issues and devote resources to providing veterans timely and accurate claims processing. The complexities and numbers of these cases, however, created workload problems for the four offices that continued to worsen. In the best interests of veterans and the offices, we decided to redistribute the Gulf War cases to all regional offices. This was accomplished in June 1997, and initially required training for all regional offices in the complexities involved in these cases. A Rapid Response Team composed of individuals highly proficient in Gulf War issues and rating procedures was established to provide immediate answers to general or claims specific questions and technical support in evaluating Gulf War issues and rating procedures. Since that time, all regional offices have become more proficient in responding to these claims. Although our current systems do not allow us to identify the specific length of time it takes to process a Gulf War veteran's claim, I can tell you that to date, we have processed some 704,040 claims of Gulf War conflict, theater, and era-veterans with 103,220 claims pending.[1], [2]

You have asked me to identify the number of claims favorably adjudicated for undiagnosed illness, the most common illnesses claimed by Gulf War veterans, and any trends or patterns VA believes have emerged in these claims. Of the total number of undiagnosed illness claims adjudicated, 3,077 of them, or 27 percent, have been granted, while 8,330 have been denied. Most denials resulted from a finding of no disability, a diagnosis that was not service-connected, or a diagnosis that was service-connected. These 11,407 claims represent less than 6 percent of the 202,272 decisions which have been made on claims filed by Gulf War Theater and Conflict veterans.[3] The undiagnosed conditions for the 3,077 claims granted, fall into 32 categories, the most prevalent being musculoskeletal diseases, miscellaneous neurological conditions, systemic diseases, lower digestive system, skin, joints, skull and ribs, trachea and bronchi, and psychoneurotic.

It should be noted that the Gulf War cohort has the highest percentage of living veterans in receipt of disability compensation (16.1 percent) of any period of recent service including World War II (8.6 percent), Korea (5 percent), Peacetime periods (9.5 percent), and Vietnam (9.6 percent). Additionally, the number of disabilities per veteran is also highest among Gulf War veterans (3.2), with World War II being (1.79), Korea (2.01), Peacetime periods (2.52), and Vietnam (2.76).[4]

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[1] Gulf War Veterans Information System (GWVIS) as of 10/15/99
[2] See Appendix for definitions.
[3] GWVIS as of 10/15/99

With respect to the prevalence of service-connected conditions among Gulf War veterans, the number one service-connected condition claimed is impairment of the knee, followed by skeletal system disability, lumbosacral strain, arthritis due to trauma, scars, hearing loss, hypertension, intervertebral disc syndrome, tinnitus, and osteoarthritis.

Trends/Patterns

We have noted a few trends emerging from our review of Gulf War claims. Of the top twenty service-connected conditions for Gulf War veterans, none were for psychological conditions, such as PTSD or anxiety disorder. Psychological conditions are among the most prevalent service-connected conditions for periods of service during war other than the Gulf War Era; for the World War II and the Korean War veterans the psychological condition was general anxiety disorder, for the Vietnam Era veterans it was PTSD. Other than undiagnosed illnesses and the absence of psychological conditions, the service-connected conditions of Gulf War veterans are very similar to service-connected conditions for veterans of other periods of service.

Training Efforts on Gulf War Issues

We have made considerable efforts to provide detailed training to employees and to ensure quality, particularly regarding the processing of Gulf War claims. Quality review of Gulf War processing at the field stations is accomplished by a special quality improvement review of a sample of Gulf War claims each month, with the results reported to our headquarters for further review and analysis. In early 1998, VBA began a new accuracy study designed to give us a current profile of Gulf War claims and a current assessment of the accuracy of claims adjudication. That study was conducted using the systematic technical accuracy review (STAR), which is a structured and comprehensive review and analysis of all processing elements associated with a claim. It included a representative sampling of approximately 4 percent of the cases complete for Gulf War claims. Sixty percent of these cases involved undiagnosed conditions. Results of this study showed that the special training, communication, and continuing reviews have had a positive impact on the quality of claims processing, resulting in better performance in the complex Gulf War area. The Compensation and Pension Service and representatives from VHA have conducted or sponsored four nationwide satellite broadcasts on Gulf War issues, including one specifically focused on disability examinations for Gulf War veterans. Hearing Officers at our regional offices were previously trained in Gulf War issues and are thus subject matter experts who can assist claims examiners as well. VHA and VBA representatives jointly developed guidelines to assist examiners who conduct Gulf War veterans' examinations. These guidelines have been incorporated into the AMIE (Automated Medical Information Exchange) System, which is a primary communication medium between VBA and VHA. A joint letter from the Under Secretaries for Health and for Benefits in early 1998 explained that examinations of Gulf War veterans must follow those guidelines or they would be returned as insufficient for rating purposes. Finally, our Training and Performance Support System (TPSS), which is geared to new rating personnel, includes instructions on handling Gulf War veterans' claims.

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[4] RCS 20-0221, 0227, and Veteran Population VA National Center for Analysis and Statistics

Second Review Status

I am pleased to inform you that the second review of over 10,000 Gulf War claims has been completed. The review resulted in the following findings:

- a grant of a newly considered undiagnosed condition – 256 claims (2.6 percent)
- a grant of a previously denied undiagnosed condition – 929 claims (9.3 percent)
- a grant of a newly considered diagnosed condition – 735 claims (7.4 percent)
- a grant of a previously denied diagnosed condition – 512 claims (5.1 percent)
- a prior service-connected grant for any other condition not changed after readjudication – 4,734 claims (47 percent)
- a new claim denied, service-connection not granted for any other condition – 647 claims (6.5 percent), and

- a confirmation that service-connection was not granted for all other cases reviewed.[5]

Outreach to Gulf War Veterans

I would like to mention the specific efforts we have made to reach out to Gulf War veterans. VA has established a Gulf War Health Examination Registry, and nearly 77,000 have registered with VA voicing their health concerns. Most of these have been diagnosed with a variety of conditions, while about 20 percent of those examined have undiagnosed symptoms. In early 1995, VA established the Gulf War Information Center/Helpline (1-800-PGW-VETS), which has received over 300,000 calls. This service is available 24 hours a day, 7 days a week and allows callers to obtain information about medical care, the Gulf War Registry, medical research involving exposure to environmental hazards, and disability compensation benefits for undiagnosed illnesses resulting from service in the Gulf. VA also published an information pamphlet, "Gulf War Veterans' Illnesses: Questions and Answers" that is available in all VA regional offices and centers, and all VHA medical facilities. Periodically, VA publishes a report to veterans on Gulf War issues. The latest was released in September 1999, and included reports on what VA is doing in the Environmental Hazards Research Centers, other epidemiology studies, new VA research efforts, information on the NAS' Institute of Medicine activities, and highlights of research findings. Approximately twice a year, VA publishes a newsletter, the "Gulf War Review" and sends it to every person on the Gulf War Registry. In addition to the latest news and information for veterans who served in the Gulf, the newsletter includes information on where veterans can go for help, either for treatment or seeking disability compensation. VA has also established an Internet site (http://www.va.gov/gulf.htm) dedicated to Gulf War veterans' issues, which is linked to other helpful sites and information. VBA has developed a slide show presentation on Gulf War veterans' issues, which is distributed to all military coordinators around the world to use in briefings for TAP and DTAP, and is also available on VA's internet web site.

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[5] Special Report of Gulf War Readjudicated Claims, Compensation and Pension Service, 02/12/98

I will now turn to the issues related to research on Gulf War illnesses, including undiagnosed illnesses, and the interaction between the medical and benefits components of VA.

Coordination of Federal Research into Gulf War Veterans' Illnesses

Coordination of research on Gulf War veterans' health is the primary responsibility of the Research Working Group of the Persian Gulf Veterans Coordinating Board (PGVCB). The mission of the Research Working Group is to provide programmatic review of and recommendations to funding agencies concerning research proposals that have been competitively reviewed for scientific excellence and programmatic relevance. VA and the other member Departments of the PGVCB, the Departments of Defense (DoD) and Health and Human Services (HHS), have spent $134M over the last 6 years on 145 federal research projects directly related to Gulf War veterans' health issues. As the lead agency in this effort, VA submitted its 5th annual report on the results, status, and research priorities of this program to the Veterans' Affairs Committees of the Senate and House of Representatives, in June 1999.

VA Research

The Department of Veterans Affairs is helping to meet the commitment to research by sponsoring a coordinated and varied national research agenda that focuses upon the health needs of Gulf War veterans. On the basis of an assessment of the health problems experienced by Gulf War veterans, VA's current research program includes studies that are classified as follows:

1. Basic Biomedical Research – studies of the underlying mechanisms of diseases and illnesses using animal and other models;
2. Patient-Focused Research – the application of interventions such as controlled trials of medical therapies, or the use of clinical investigative methods such as case-control studies to examine disease risk factors; and

3. Epidemiology Research -- the use of population based studies (focusing on outcomes such as mortality, symptoms, hospitalizations) and other information collection techniques such as postal surveys, telephone interviews, and records reviews.

The number of research projects in various research focus areas has changed over the last six years, as our understanding of Gulf War veterans' illnesses has changed and improved. Following is a description of some initiatives currently in progress that we hope will provide valuable information..

- To characterize more completely the health status of the Gulf War veteran population, VA funded the National Health Survey of Gulf War Era Veterans and Their Families. Health questionnaires were mailed to a random sample of 15,000 Gulf War veterans and 15,000 era veteran controls. The study compares rates of various symptoms and medical conditions, including problems in reproductive health, and attempts to relate them to various self-reported environmental exposures. Currently, VA is in the midst of the final phase (the Phase III component), which includes a physical examination of the veterans, their spouses, and their children. When completed, the study will examine 2,000 veterans and approximately 3,000 spouses and children.

- In 1999, VA initiated two Multi-Center Treatment Trials for Gulf War veterans. From several studies we know that thousands of Gulf War veterans suffer from a wide variety of symptoms including fatigue, muscle and joint pain, and difficulty with memory and thinking. In many cases, the cause of these difficulties cannot be identified nor a single underlying disease can be identified. In response, VA is undertaking a $20M project with DoD on two large-scale treatment trials of innovative methods for treating undiagnosed illnesses in Gulf War veterans.

  1. Exercise/Behavioral Therapy trial. This focuses on exercise and behavioral therapy techniques that have proven effective in managing symptoms of some chronic illnesses. Application of these techniques will not necessarily

cure Gulf War veterans' illnesses, but we hope that they may help to reduce suffering and allow veterans to enjoy an increased level of functioning in their lives.

2. Antibiotic Treatment trial. This addresses the suggestion that infection with Mycoplasma is at the root of some Gulf War veterans' illnesses. Although there is no established link between Gulf War veterans' illnesses and infection with Mycoplasma, some veterans are taking the antibiotic doxycycline for up to a year in the hope of improving their health. This trial should help establish the value of an approach using antibiotic therapy because this drug is being used for a condition for which it is not currently approved by FDA. We have obtained FDA approval to use it under an Investigational New Drug application.

- On July 30, 1999, an ad hoc Advisory Committee, which included representatives from the VA Cooperative Studies and Epidemiologic Research and Information Center Programs, VA Environmental Hazards Research Centers and Environmental Epidemiology Service, the ALS Association, and neurology experts from VA and academic institutions, met to review available data on the number of known cases of amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease) cases among Gulf War veterans, the possible rate of occurrence of ALS, and the age distribution of cases. The Advisory Committee concluded that while there is no clear indication of an excess rate of ALS in Gulf War veterans, the available data may underestimate the actual rate, and the age distribution of cases may be younger than the age distribution of ALS cases in the general U.S. population. The Committee, therefore, recommended that VA proceed with the planning of a large epidemiologic study of ALS among Gulf War veterans. The planning for this study is underway. The central focus of the study will be a nation-wide effort to identify all cases of ALS or other motor-neuron diseases occurring among Gulf War veterans, determine their health status, and describe their exposures to potential etiologic and risk factors from in-home interviews and clinical examinations in neurologic diseases. VA expects to initiate the study early in the year 2000.

- To foster input from stakeholders into our research agenda, VA is establishing the Research Advisory Committee on Gulf War Veterans Illnesses, as required by §104 of Public Law 105-368. This Committee will provide advice on proposed research studies, plans, and strategies relating to the health consequences of military service in Southwest Asia and during the Gulf War. It will make recommendations to VA's Under Secretary for Health and the Secretary of Veterans Affairs. Nominations for membership on the Committee have been made to the Secretary. Included among those nominated are both government and non-government scientists from the Institute of Medicine, VA and DOD, and representatives from a variety of veterans service organizations. The first meeting of the committee will be within 45 days following appointment of the Committee members.

Contribution of Research to Clinical Practice

While research is a basic tool to further our understanding of Gulf War veterans' illnesses, it is equally important to translate the results of research into effective clinical treatment of those illnesses. The following three initiatives are important examples of how VA's research, clinical, and benefits programs collaborate to improve the quality of health care provided to Gulf War veterans.

- Since 1995, VA has sponsored an annual conference of federally funded research on Gulf War health. This conference brings together stakeholders, researchers, clinicians, veterans, veterans' groups, and government representatives to exchange and discuss research results and current best practices for the treatment of Gulf War illnesses.

- Since 1992, VHA headquarters has conducted quarterly conference calls with Gulf War health registry physicians and coordinators at VA medical centers. These conference calls are designed to provide VA field staff with the latest information on research and health care for Gulf War veterans.

- A March 1998 directive from the Under Secretary for Health required all VA physicians to complete VA's Continuing Medical Education Program, "A Guide to Gulf War Veterans' Health." This educational program covers all of our current knowledge about Gulf War veterans' health issues, including research findings and unexplained illnesses.

Literature Review by the National Academy of Sciences-Institute of Medicine (NAS-IOM)

Aware of the concerns of Gulf War veterans about long-term health consequences of military service in the Gulf, the Under Secretary for Health requested that the National Academy of Sciences (NAS) conduct a review of the available scientific and medical information regarding the association between exposures during the Gulf War and adverse health effects experienced by some Gulf War veterans. The National Academy of Sciences' proposal for this task was accepted and the contract was signed on June 24, 1998.

The project will be carried out by the NAS' Institute of Medicine's (IOM) Board on Health Promotion and Disease Prevention. An NAS Committee will provide a comprehensive review, evaluation, and summary of available scientific/medical information regarding the association between exposure during the Gulf War and adverse health effects experienced by Gulf War veterans. This review will include an assessment of biologic plausibility that exposures, or synergistic effects of combinations of exposures, are associated with illnesses experienced by Gulf War veterans. The NAS will make recommendations for additional scientific studies to resolve areas of continued scientific uncertainty related to health consequences.

This IOM study is an important development for VA Gulf War veterans' programs. The first milestone will be a complete review in August 2000 of the following:

- Pyridostigmine bromide (PB)
- Vaccines (Anthrax, Botulinum toxin, Squalene adjuvant)
- Uranium

- Depleted Uranium
- Sarin, and
- Cyclosarin

Following its completion, the Secretary of Veterans Affairs will determine which, if any, health effects should be considered for presumption of service-connection. The model for this activity is the ongoing Agent Orange studies conducted by IOM that provide the basis for presumptive service-connection for Vietnam veterans. It is a model that has proven to be effective in forming a solid basis for compensation for Vietnam veterans.

Use and Exchange of VBA Data

VBA and VHA routinely engage in numerous forms of data exchanges to support benefits and health care delivery. From on line access to the data available in the Gulf War Veterans Information System (GWVIS) to the Automated Information Medical Exchange (AMIE) program, to the basic exchange of "hard copy" claims folders and medical records, we continue to share, and search for new ways of expanding information sharing, to improve services.

Although claims data is by and large not a satisfactory source information for clinical research purposes VHA has used VBA data in medical surveillance of Gulf War veterans' illnesses. For example:

- When VHA began its review of ALS diagnoses in Gulf War veterans a search was made of VBA benefits data and VHA Registry, outpatient and inpatient databases. This became the key initial step in VHA's ongoing research on ALS in the Gulf War veteran population.

- VHA and VBA databases have been used in combination to ascertain the number of Gulf War veterans with cancer diagnoses.

- Death data from VBA's Beneficiary Identification and Records Locator Subsystem (BIRLS) is used by VHA's Environmental Epidemiology Service to identify deceased veterans whose death certificates are subsequently reviewed for the purposes of the VA's Mortality Follow-up Study of Gulf War Veterans. This study will compare the overall mortality rates and causes of mortality of the nearly 700,000 Gulf War veterans who served during the period of hostilities with those of a control group of non-deployed veterans.

- Most recently, VBA generated an extract from the GWVIS identifying veterans filing claims for undiagnosed illnesses. The first part of a three phase exchange project and specific to claims granted, the data is being used to identify veterans receiving treatment at VA health care facilities and physicians demonstrating particular competency treating Gulf War illnesses. Additional data, identifying veterans whose claims were denied and veterans whose claims for undiagnosed illness were subsequently diagnosed, is under development as second and third phases of the effort.

While we have a lot of work left to do, we feel that we have made significant progress in the treatment of Gulf War veterans and in the adjudication of their claims. Mr. Chairman, as I have said before, we owe veterans and their families the best service we can provide in the most sensitive, caring way possible to ensure that they receive benefits in a manner befitting their service to our Nation.

This concludes my prepared statement. My colleagues and I will be pleased to answer any questions Subcommittee members might have.

Appendix

Gulf War Common Definitions

Gulf Conflict

Active duty military service in the Southwest Asia theater of operations beginning on or after August 2, 1990 through July 31, 1991.

Gulf Theater

A period of active duty military service beginning after July 31, 1991 and continuing to the present, occurring in the Southwest Asia theater of operations as defined by 38 CFR 3.317. It includes Iraq, Kuwait, Saudi Arabia, Bahrain, Qatar, the United Arab Emirates, Oman, the Gulf of Aden, the Gulf of Oman, the Persian Gulf, the Arabian Sea, the Red Sea, and the airspace above all of these locations.

Gulf Era

Active duty military service beginning on or after August 2, 1990 and continuing to the present, that did not at any time occur within the Southwest Asian theater of operations. This includes all individuals activated from "Reserve" or "National Guard" status and subsequently separated from active duty.

Committee on Veterans' Affairs
Subcommittee on Benefits
United States House of Representatives
October 26, 1999
Invited Testimony by
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I have been asked to explain how physicians who see sick Gulf War veterans can observe the same or similar symptoms and interpret them as either undiagnosed illness or diagnosed illness. Even when doctors apply monikers to these patients' illnesses, like depression, migraine headaches, asthma, irritable bowel or fibromyalgia, these monikers do not explain *why* these veterans are sick. Most have symptoms involving several organ systems simultaneously. For them there is no unifying diagnosis offered, no etiology specified, and no disease process clarified.

In truth, all of these veterans are undiagnosed because what we are dealing with is an entirely new mechanism of disease not covered by standard medical diagnoses -- one which presents itself symptomatically as different conditions to different specialists.

The rheumatologist observing diffuse muscle pain diagnoses myalgias.

The neurologist hearing head pain and nausea diagnoses migraine headaches.

The pulmonologist finding airway reactivity diagnoses asthma.

The psychiatrist seeing chronic malaise diagnoses depression.

The gastroenterologist noting GI complaints diagnoses irritable bowel syndrome.

Some private practitioners diagnose multiple chemical sensitivity, or MCS, which is not a diagnosis in itself, but rather just another manifestation of the underlying disease process.

So what is at the core of this myriad of symptoms that has come to be called "Gulf War Syndrome?" What is the underlying disease process? The key is in the new-onset intolerances these people share.

Over the past six years, I have served as a consultant to the VA's referral center for Gulf War veterans in Houston. The vast majority of the veterans there reported multiple new intolerances since the War. Among the first 59 patients, 78% reported new-onset chemical intolerances; 40% experienced adverse reactions to medications; 78% described new food intolerances; 66% reported that even a can of beer made them feel ill; 25 percent became ill after drinking caffeinated beverages; and 74 percent of smokers felt sick if they smoked an extra cigarette or borrowed someone else's stronger brand. More than half reported new intolerances in all three categories -- chemical inhalants, foods, and drugs or food/drug combinations.

One mechanic said that before the Gulf War his idea of the perfect perfume was WD-40. Since the war, WD-40 and a host of other chemicals make him feel ill. Many veterans no longer fill their own gas tanks because the gasoline vapors make them "spacy" or sick. Some won't drive because they become disoriented in traffic and they fear causing an accident. Or they can't find their cars, forget where they are going or get lost in once familiar areas. One VA study found excess motor vehicle deaths among Gulf veterans and interpreted this as possible increased risk-taking behavior (Kang and Bullmann, 1996). What the veterans tell me is that they get confused, go off the road, mistake the accelerator for the brake, and have trouble judging stopping distances when they are exposed to gasoline, diesel exhaust, or freshly tarred roads.

Researchers at the Robert Wood Johnson Medical School in New Jersey and at the University of Arizona have noted similar multi-system symptoms and intolerances to common chemicals, foods, and drugs among the veterans (Fiedler et al, 1996; Bell et al, 1998). And a CDC study found that ill Gulf War veterans reported more chemical intolerances than healthy veterans (Fukuda et al, 1998).

These studies are confounded by a phenomenon called "masking," which occurs when people become intolerant to many different things (Miller and Prihoda, 1999a). As they go through a day, symptoms triggered by fragrances, hairspray, vehicle exhaust, foods and medications pile up so they feel sick most of the time. No one cause can be isolated because there's too much background noise, and patients often underestimate the number of exposures that affect them.

This problem is not altogether new. German researchers described similar intolerances in chemical weapons workers after World War II (Spiegelberg, 1961). Nearly 20 percent of agricultural workers on a California registry for organophosphate pesticide poisoning (Tabershaw and Cooper, 1966) reported that even a "whiff" of pesticide made them sick with symptoms like those of the Gulf War veterans, as did dozens of government workers a decade ago, after the EPA headquarters became a "sick building" following remodeling (EPA, 1989). Similar outbreaks of chemical intolerances have been reported in more than a dozen countries (Ashford et al, 1995).

These observations suggest that we may indeed be dealing with an entirely new mechanism for disease, one which has been referred to with the acronym "TILT", or "Toxicant-induced Loss of Tolerance" (Miller, 1996, 1997, 1999). Any one toxicant appears capable of initiating this process. TILT involves two steps, initiation and triggering (Ashford and Miller, 1998): (1) First, a single acute or multiple low-level exposures to a pesticide, solvent or other chemical causes loss of tolerance in a subset of those exposed; (2) Thereafter very low levels of common substances can trigger symptoms -- not only chemicals, but various foods, medications, alcoholic beverages and caffeine. Symptoms involve several organ systems. These intolerances are the hallmark of TILT, just as fever is the hallmark symptom of infectious diseases.

Over the past several years, the finger has been pointed at a number of potential causes for Gulf War Syndrome -- everything from the oil shroud to pesticides, vaccinations, and pyridostigmine bromide. What set off the Gulf War Veterans? The answer is "all of the above." Exposure to any one or any combination of these toxicants may, in fact, be capable of causing a general breakdown in tolerance that can result in a plethora of beguiling symptoms.

We do not know exactly how this breakdown in tolerance occurs. We do know that rats with nervous systems sensitive to organophosphate pesticides are also intolerant of diverse drugs and have increased gut permeability which in humans is associated with food intolerance (Overstreet et al, 1996). This suggests the breakdown might involve the cholinergic nervous system, which regulates processes throughout the body.

How can these people be helped? No one knows -- yet. The biggest obstacle is the symptoms themselves, which serve as red herrings, diverting attention away from the central problem. What we do know is that Gulf War veterans, who have come to recognize what sets them off and then avoid these triggers, tend to improve. We need to apply this understanding to the diagnosis and treatment of other such veterans.

The first thing that needs to be done is to set up *unmasking* studies in which sick Gulf War veterans can be isolated from the exposures that are setting them off. This can be achieved by putting them in a special environmentally controlled hospital unit (Miller, 1997; Miller et al, 1997). Once we get them to baseline, we can reintroduce things like caffeine, perfumes, various foods, etc., and identify some of the things that cause their flare-ups. With avoidance, it is hoped that they, too, can improve. This combined diagnostic-therapeutic approach would eliminate much of the confusion that is the focus of this hearing.

There is no simple answer to Gulf War illness. No single toxicant is likely to have caused it. But if we concentrate less on the original toxicants and more on the underlying disease mechanism, I believe we can make progress in understanding why these people are sick and what we can do to help them.

Figure 1. Exposures that may initiate TILT or trigger symptoms

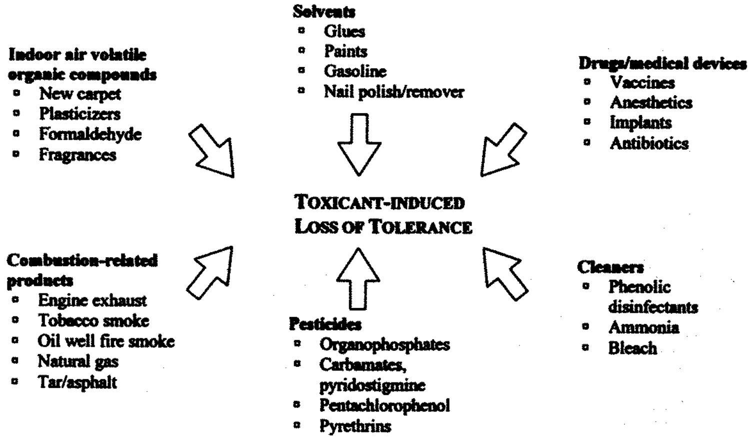
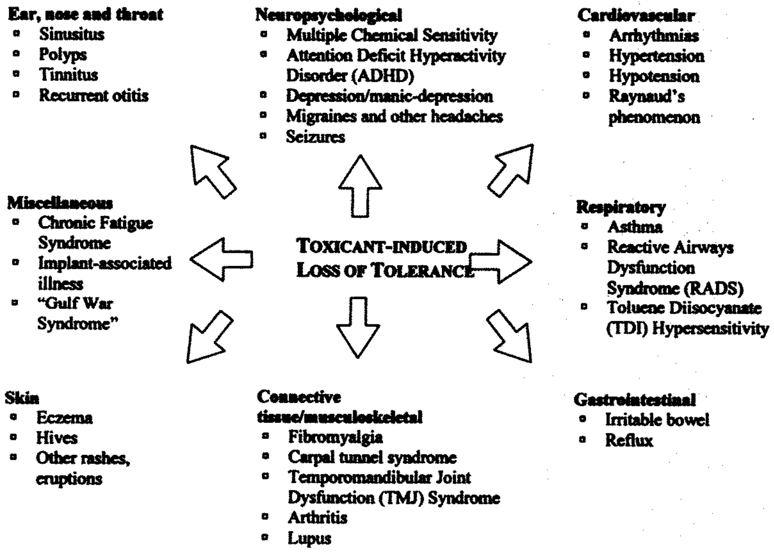


Figure 2. Conditions that may have their origins in TILT


Ear, nose and throat
Sinusitus
Polyps
Tinnitus
Recurrent otitis
Neuropsychological
Multiple Chemical Sensitivity
Attention Deficit Hyperactivity Disorder (ADHD)
Depression/manic-depression
Migraines and other headaches
Seizures
Cardiovascular
Arrhythmias
Hypertension
Hypotension
Raynaud's phenomenon
Miscellaneous
Chronic Fatigue Syndrome
Implant-associated illness
"Gulf War Syndrome"
TOXICANT-INDUCED LOSS OF TOLERANCE
Respiratory
Asthma
Reactive Airways Dysfunction Syndrome (RADS)
Toluene Diisocyanate (TDI) Hypersensitivity
Skin
Eczema
Hives
Other rashes, eruptions
Connective tissue/musculoskeletal
Fibromyalgia
Carpal tunnel syndrome
Temporomandibular Joint Dysfunction (TMJ) Syndrome
Arthritis
Lupus
Gastrointestinal
Irritable bowel
Reflux

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BIOSKETCH

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Other support related to these proceedings: Dr. Miller has served as a consultant to the Houston VA Regional Referral Center for Gulf War Veterans since 1993. She is also principal investigator on a study of neurobehavioral sensitization funded by the Office of Naval Research.

The statement of Victor Gordan, MD before the U.S. House of Representatives, Committee on Veterans' Affairs - October 26, 1999. 325 Cannon House Office Building Washington, DC 20515.

Mr. Chairman,

My name is Victor Gordan. I am a staff physician at the VA Medical Center in Manchester NH and I am in charge of the Persian Gulf Registry and the Primary Care Gulf Clinic. Thank you for giving me the opportunity to testify before the Committee.

I will describe my experience and express my opinion on the undiagnosed illnesses experienced by the Persian Gulf war veterans under my care at the VA Medical Center in Manchester, NH. I will also present to you some explanations and clarify as best as I can how many physicians attribute similar signs and symptoms of these poorly defined illnesses to a diagnosed condition and not to an undiagnosed condition.

I have evaluated 668 Persian Gulf war veterans. I have followed the majority of these veterans over the years in the Primary Care Gulf clinic.

Approximately 3% of these veterans have no symptoms but they decided to enroll in the Persian Gulf Registry. The rest of these veterans do present symptoms, which are now so familiar to us. The average number of symptoms per person is 8. This number is similar to the average number of symptoms per person presented by the British and Canadian researchers at the annual conference on Gulf war illnesses, organized by the DOD and the VA at Palm Beach CA in 1996.

I divided my Gulf veterans who presented with symptoms into two subgroups: one subgroup which contains the majority, have only undiagnosed illnesses. The second subgroup, which is rather small, contains veterans who are older than 50 years and have both undiagnosed and diagnosed illnesses. Examples of diagnosed illnesses are: Degenerative Joint Disease proved by x-ray findings; hypertension, proved by blood pressure measurements; diabetes, proved by blood sugar measurement; post traumatic stress disorders (PTSD), diagnosed by required clinical criteria, etc. I would like to strongly emphasize that these veterans, besides having these diagnosed illnesses, present other symptoms and signs, which do not fit into the frame of the diagnosed illnesses. Therefore, the symptoms which do not fit into the frame of the diagnosed illnesses, and for which I could not find an explanation, constitute undiagnosed illnesses.

In conclusion, all the veterans, (100%), evaluated by me who have symptoms have undiagnosed illnesses and a small subgroup I have just described have both diagnosed and undiagnosed illnesses. Less than 0.5% were found to have alcohol and drug problems.

Allow me now to concisely elaborate on how I reach the conclusion of an undiagnosed illness in a person. The protocol I use in this process is the one, which was devised by the VA Central Office and is called Uniform Case Assessment Protocol (UCAP). This consists of taking patient's history, meaning listening to the patient's complaints and symptoms. Recording the health status of the veterans before deployment, which invariably ranges from very good to excellent to perfect, is also part of the patient's history. The history of exposure to various environmental hazards, vaccinations, medication is also addressed in detail. The laboratory workup, which includes blood tests, and various types of x-rays, CT scans Magnetic Resonance Imaging (MRI) as indicated in individual situations.

If this part of the evaluation does not support the identification of a diagnosed illness, then the veteran is referred for a consultation with specialists i.e. neurology, psychiatry, gastroenterology, rheumatology, cardiology, pulmonary disease, etc.

Some of the veterans who have health insurance coverage prefer to be evaluated by specialists in the private sector. If the specialists are not able to establish the presence of diagnosed illnesses, then the veteran is considered to have an undiagnosed illness or illnesses.

In many cases, the diagnostic workup described above is not based on only one evaluation. This is an ongoing process involving followup visits, repeat laboratory tests and referrals to specialists.

Based on this approach, I am certain in my judgement when I attribute these ill-defined symptoms and signs to an undiagnosed conditions(s).

In order to clarify the issue of diagnosed versus undiagnosed illness in Gulf war veterans, I will mention two facts: At the annual conference on Gulf War Illnesses held in Baltimore MD in 1995, which was organized by the DOD and VA, I learned from the DOD research presentation that only 12% of the individuals still in active duty and who were deployed to Gulf Theater have undiagnosed illnesses and the rest of 88% have diagnosed illnesses. At the same conference, the VA researchers communicated their research results, which found that 24% of Gulf war veterans have undiagnosed illnesses and 76% have diagnosed illnesses. Several months later, the VA changed its initial statistics i.e. 24% versus 76% of undiagnosed and diagnosed illnesses respectively to 12% undiagnosed illnesses and 88% of diagnosed illnesses. As you can clearly see, the latter statistics are identical to the DOD statistics. I do, not know the reasons for this significant statistical change on the part of the VA.

If the initial VA statistics were scientifically correct, then the subsequent changes can not be explained by the medical science rules.

I challenged these statistics during that conference. I asked the presenters to describe to the audience the scientific methods used in order to support these statistical results. No scientific methods were presented. The presenters instead gave explanations to support their statistical numbers. These explanations were far from the medical science and I could not accept them as scientifically valid.

The second fact which I will describe, involves approximately 25 to 30 Persian Gulf war veterans from outside the state of New Hampshire who were evaluated in the Persian Gulf Registry elsewhere. These veterans came to me for a second opinion concerning their symptoms. They also brought to me copies of their Persian Gulf Registry records. In none of these records could I find the mentioning of undiagnosed illnesses. Instead, all these young veterans were considered to have diagnosed illnesses such as arthritis, irritable bowel syndrome, post traumatic stress disorders (PTSD), somastisation disorders, carpal tunnel syndrome, eczema, migraine headaches etc. I could not find any clinical or laboratory date to support these diagnoses. Because no scientific evidence was presented at the 1995 Conference in Baltimore MD and because no clinical or laboratory support could be found by me in the Persian Gulf Registry records of those who came to me for a second medical opinion from other states, I am left only with postulations on how and why the VA researchers and other VA physicians attributed the ill-defined veterans' illnesses to diagnosed diseases.

In order to be able to clarify this complex issue of diagnosed versus undiagnosed illness in Gulf war veterans, I will present to you a representative not hypothetical case from the group of the Persian Gulf war veteran under my care: A 23 year old male from US Marines Corp who presents the following symptoms which he developed within 6 months of his return from Gulf war: headaches, joint pains, numbness in hands, dropping objects from hands, memory loss and lack of concentration, mood swings with depression, sleep problems, skin lesions, diarrhea, palpitations, disorientation and spacing out spells, profuse sweats and hot flashes, rectal bleedings, fatigue, brittle teeth and loss of teeth. Examination of the patient and lab results is negative. As you can see, this young veteran has 15 symptoms. If one takes individual symptoms or lumps together several of these described symptoms one can easily come up with descriptive labels of diagnosed diseases. When these labels are not supported by clinical criteria or laboratory tests, these remain just labels or false diagnoses.

A diagnosed disease has a code whereas an undiagnosed disease has no code. I am going now to play a labeling game with these 15 ill-defined symptoms and as a result of this game I will come up with 10 diagnosed diseases. Let's start:

Headache is migraine headache, which has code. Joint pains, (negative x-ray), is arthritis, which has code. Numbness in hands and dropping objects from hands is carpal tunnel syndrome, which has code. Memory loss, lack of concentration, mood swings and sleep problems is post-traumatic stress disorder (PTSD), which has code. Skin lesions is eczema, which has code. Diarrhea is irritable bowel syndrome, which has code. Disorientation, spacing out spells, profuse sweats and hot flashes is panic disorder, which has code. Rectal bleedings are hemorrhoids, which are not found on examination but has code. Fatigue is chronic fatigue syndrome, which has code. Brittle teeth and loss of teeth is periodontitis, which has code. In conclusion, this 23-year old who rated his health status before his deployment to Gulf war as being perfect, came down in a very short period of time with 10 diagnosed diseases as a result of my labeling game. If this veteran truly came down with 10 diagnosed diseases, then we would be encountering an epidemic outburst of diagnosed diseases in 88% of the Persian Gulf war veterans with symptoms, according to DOD and the VA statistics. This would involve tens of thousands of young veterans. This would constitute an unprecedented epidemiological event in the history of medicine.

Putting labels of diagnosable disease on ill understood, ill-defined medical conditions is a high temptation for many physicians for selfish reasons. The few doctors like myself who have the courage to say to the patient, yes you have symptoms which are real but I am not able to formulate a diagnosis is not easy. However, this is professional honesty.

In conclusion, we are dealing with ill-defined illnesses, which appear to be the expression of dysfunction multi-organ systems of the human body, in young individuals whose health status before deployment to Gulf war is rated by them from very good to excellent to perfect. To use labels of diagnosed diseases on these illnesses, will only cover the tragic reality, the reality of the presence of undiagnosed illnesses in the Persian Gulf war veterans.

Before I conclude my statement, I would like to make two remarks: #1. Before the implementation of the PL 103-446, the most common reason for claim denials in Gulf veterans was that the veteran has undiagnosed diseases. After the implementation of PL 103-446, the most common reason for claim denials is that the veteran has diagnosed diseases and not undiagnosed illnesses. Quite a dramatic flip-flop! #2. I propose that PL 103-446 should be changed because the way the law is formulated authorizes the VA to award SC% status for undiagnosed illnesses only if these illnesses reach the minimum 10% of disability. The formulation of this law should be change in order to authorize the VA to award also 0% SC for undiagnosed illnesses as the VA does for diagnosed conditions such as scars. Many veterans' claims are denied even when the rating board admits that the veteran has an undiagnosed illness but because he disability from the undiagnosed illness does not reach the minimum of 10% the claim is denied. I made this proposal more than once before.

Thank you very much for listening to me. I am ready to answer questions.

Victor Gordan MD

VICTOR GORDAN, MD, FACP

MATTHEW L. PUGLISI
ASSISTANT DIRECTOR, VETERANS AFFAIRS AND REHABILITATION DIVISION
THE AMERICAN LEGION
BEFORE THE
VETERANS' AFFAIRS SUBCOMMITTEE ON BENEFITS
UNITED STATES HOUSE OF REPRESENTATIVES
ON
GULF WAR VETERANS ISSUES

OCTOBER 26, 1999

Mr. Chairman and distinguished members of the Subcommittee:

The American Legion appreciates the opportunity to offer testimony regarding Gulf War veterans issues, particularly the adjudication of Persian Gulf undiagnosed illness claims by the Department of Veterans Affairs (VA). Your leadership on the issue of Gulf War undiagnosed illness claims in 1997 led directly to a significant decrease in the backlog of those claims (Veterans Affairs, 1997-98). Your continued concern and oversight of this process has kept the pressure on VA to adjudicate these claims as well as possible.

Yet, in spite of your oversight, and the oversight of The American Legion, most Gulf War veterans who file a disability claim for undiagnosed conditions are denied service connection and compensation from VA (Veterans Affairs, 1999). This situation exists in spite of the fact that VA adjudicated most Persian Gulf undiagnosed illness claims twice, and overhauled the undiagnosed illness claims process. VA is failing to compensate disabled veterans with undiagnosed or diagnosed illnesses like chronic fatigue syndrome (CFS) because its regulations implementing Public Law 103-446, the "Veterans Benefits Improvements Act of 1994," were written too narrowly.

The American Legion therefore recommends that the Committee urge VA to change its regulations regarding Persian Gulf undiagnosed illness compensation in order to bring them more in line with the spirit of PL 103-446 and the available scientific evidence regarding Gulf War veterans' illnesses.

Background

The Gulf War was like all of our nation's past wars in that it left thousands of disabled veterans in its wake. And like our past wars (Stellman, 1988; Hyams, 1996; Elder, 1997), thousands of deployed Gulf War veterans report Medically Unexplained Symptom Syndromes (Institute of Medicine, 1998), known collectively as Gulf War veterans' illnesses (Iowa Persian Gulf Study Group, 1997; Fukuda, 1998; Unwin, 1999). Although some of the risk factors troops were exposed to in the Persian Gulf were the same as those found in past wars, some were different, such as pyridostigmine bromide (Keeler, 1991), or PB. As Gulf War veterans began reporting these hard to define illnesses, VA was confronted with compensating these disabled veterans. VA, however, did not. Faced with disabled war veterans, VA pointed to public laws and blamed them for its inability to compensate these veterans. Congress acted in 1994 with the passage of legislation that was intended to prevent these veterans from "slipping through the cracks."

Public Law 103-446: The "Veterans Benefits Improvements Act of 1994"

Congress' intent in this law was clear. Aware of VA's claim that thousands of disabled Gulf War veterans were ineligible for disability compensation because Gulf War veterans' illnesses remained ill defined and poorly understood, Congress passed a law that would permit VA to compensate these veterans. Yet most of those veterans who file a claim for undiagnosed illness compensation are denied service connection for those conditions. Why? VA regulations implementing the law, codified in 38 C.F.R., section 3.317, strictly limit eligibility for this unique type of disability compensation.

Comparison of PL 103-446 and 38 C.F.R., Section 3.317

Mr. Chairman, a comparison of the language contained in PL 103-446 and VA's regulations implementing the law explain why many sick Gulf War veterans are denied compensation. Congress wanted VA to compensate disabled Gulf War veterans "who suffer from illnesses that cannot be diagnosed *or defined*" (Public Law 103-446). [Emphasis added] Floor statements and hearing transcripts from the period during which the law was crafted make clear that Congress intended for VA to compensate Gulf War veterans suffering from disabilities that were likely related to their Gulf War service, regardless of how these illnesses would be labeled by a physician. Congress selected the phrase "clearly defined" later in the law to make clear that the lack of a diagnosis was not the only criteria in which VA could then grant compensation.

VA, however, wrote regulations that ensure it will not compensate most Gulf War veterans who suffer from undiagnosed or similar diagnosed illnesses. "Objective indications of chronic disability," "'signs' in the medical sense of objective evidence perceptible to an examining physician," and "independent verification" are phrases found in the regulations VA wrote in order to implement PL 103-446. This specific criteria guiding VA officials on how to adjudicate these claims bears little resemblance to the public law which they are meant to implement.

Mr. Chairman, the illnesses which fall under the definition "Gulf War Syndrome" share many symptoms, but they can be labeled several ways by physicians. Among the labels are CFS and fibromyalgia (FM). VA, however, will only compensate Gulf War veterans who do not receive a diagnosis from a physician.

Physicians undergo years of rigorous training in order to diagnose and treat illness. Yet VA compensates veterans who are examined by physicians who are *unable* to diagnose their illness. This leaves many disabled Gulf War veterans in a bizarre situation. If their examining physician labels their illness, they are ineligible for compensation. If the physician does not, they become eligible for compensation. This scenario would be comical if it did not result in the continued suffering of war veterans.

Chairman of the House Veterans' Affairs Committee

The failure of VA to adequately compensate many disabled Gulf War veterans is not a new issue, nor has Congress ignored it. On June 3, 1998 the Chairman of the House Veterans' Affairs Committee wrote the Secretary of Veterans Affairs about this matter. Chairman Stump's letter clearly described how VA had an obligation to compensate all Gulf War veterans left disabled by their military service, and further, how PL 103-446 gave VA the statutory authority to do so. His letter went on to urge the Secretary to revise VA's regulations in order to bring them more in line with the law and its mission. The Secretary of Veterans Affairs refused.

Medically Unexplained Symptom Syndromes

The Institute of Medicine (IOM) published a report in January 1998 regarding the Department of Defense's (DoD) Comprehensive Clinical Evaluation Program (CCEP). The CCEP is DoD's identical version of VA's Persian Gulf Health Registry, and it is available for Gulf War veterans on active duty. IOM's report provides us with an insightful description of the illnesses that Gulf War veterans exhibit. It was clear to IOM then, and it is clear to many researchers investigating Gulf War veterans' illnesses today, that the pattern of symptoms reported by these veterans overlap with some recognized illnesses such as CFS and FM. In order to create some consistency in describing these illnesses the phrase Medically Unexplained Symptom Syndromes, coined by IOM, becomes helpful. It is not a case definition, so it cannot be diagnosed, per se. But it describes what is happening to these sick veterans.

There is a growing body of evidence found in the medical literature which suggests that the symptoms of CFS and FM so overlap with each other that these illnesses are sometimes indistinguishable to physicians. CFS and FM are diagnoses that physicians arrive at after they have excluded other diseases. Patients with these illnesses do not test positive on any available medical tests. One does not test positive on a blood test for fatigue, for instance. Physicians diagnose these illnesses after spending a great deal of time with a patient. Different examining physicians of the same patient can diagnose one or the other or none of these illnesses in the same patient.

Deployed Gulf War veterans suffer from significantly worse health than non-deployed veterans (Iowa 1997; Fukuda, 1998; Unwin, 1999). The causes of Gulf War veterans' illnesses remain unknown, but even the Presidential Advisory Committee on Gulf War Veterans' Illnesses found that these diffuse illnesses were likely service connected (PAC, 1996). Some investigators have argued that these illnesses were found after all our wars since at least the Civil War (Hyams, 1996). Although the explanations for this phenomenon are controversial, it remains that the occurrence of ill defined syndromes in combat veterans is a fact.

CFS and FM are not well understood by the medical community. Their exact causes remain unknown. Since epidemiological studies completed to date show that Gulf War veterans report significantly more health symptoms consistent with these illnesses than non-deployed veterans; and since Congress intended for such disabled veterans to be compensated by VA; then it is VA's obligation to amend its regulations in order to incorporate what has been learned in Gulf War research since 1994. VA must implement the will of Congress as it has clearly refused to do for almost five years.

PB, Pesticides and Chemical Warfare Agents

A great deal of federally sponsored and private research is investigating the role of the above risk factors in Gulf War veterans' illnesses (Veterans Affairs, 1999). In particular, PB, of all the above risk factors, has withstood great scrutiny and remains a plausible risk factor (Golomb, 1999). Investigators have found in animal and human research that some chemicals, in combination with PB, could cause subtle nerve damage in animals, and perhaps humans (Abou-Donia, 1996; Haley, 1997; Chaney, 1997). The impact on an exposed person's health would be subtle, and would not likely be measured in most diagnostic tests. Symptoms would include fatigue, headaches and joint and muscle pain, to name several.

Physicians examining these patients may, or may not, diagnose them with some illness (Haley, 1997). The symptoms exhibited by these patients overlap with those of CFS and FM (Amato, 1997; Haley, 1997). It is therefore entirely possible that a Gulf War veteran exposed to these chemical risk factors, and presented with symptoms related to those exposures, could be diagnosed with CFS, FM, or some other illness. If they were, however, they would not be found service connected by VA under its current regulations.

Recommendation

Mr. Chairman, The American Legion recommends that the Committee urge VA to revise its regulations regarding Persian Gulf undiagnosed illness compensation in order to bring them more in line with the spirit of PL 103-446 and the available scientific evidence regarding Gulf War veterans' illnesses.

Conclusion

Mr. Chairman, Congress listened to sick Gulf War veterans in 1994 and acted by passing legislation granting VA the authority to compensate those with difficult to diagnose and ill defined illnesses. VA has failed to implement the law, and thousands of Gulf War veterans remain without compensation for these service connected disabilities. The American Legion is encouraged by your continued interest in this matter, and we look forward to you taking action in the near future that would resolve this issue.

Mr. Chairman, that concludes my statement. I would be happy to answer any questions.

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STATEMENT OF
JOY J. ILEM
ASSOCIATE NATIONAL LEGISLATIVE DIRECTOR
OF THE
DISABLED AMERICAN VETERANS
BEFORE THE
HOUSE VETERANS' AFFAIRS COMMITTEE
SUBCOMMITTEE ON BENEFITS
OCTOBER 26, 1999

MISTER CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I am pleased to present the views of the Disabled American Veterans (DAV) regarding the Department of Veterans Affairs (VA) management of Persian Gulf War (PGW) veterans in terms of treatment and claims' processing for undiagnosed illnesses. The plight of PGW veterans suffering from unexplained illnesses related to their service in the Persian Gulf continues to be one of our foremost concerns and is of great importance to the DAV's more than one million members and their families.

During Operations Desert Shield and Desert Storm, the United States deployed 697,000 military personnel to the Persian Gulf. Serious health concerns related to service in the Persian Gulf were reported as Gulf War veterans began to return home in 1991 with complaints of vexing symptomatology and the development of unexplained illnesses. Subsequently, the variety of medical symptoms frequently associated with service in the Persian Gulf were referred to by some as "Gulf War Syndrome." The complexity and controversy surrounding Gulf War Syndrome immediately became apparent as the VA attempted to medically treat and compensate veterans who had become ill following their military service in the Persian Gulf. Heightened controversy over this issue exists today, more than eight years later, as scientists and medical researchers continue to search for answers and contemplate the various health risk factors associated with service in the Persian Gulf theater and reported illnesses affecting many veterans who served there.

Veterans and advocates have recognized that two PGW veterans suffering from similar ill-defined health problems may find themselves treated very differently by the health care and benefits systems of the VA. The DAV believes PGW veterans are significantly disadvantaged in the VA system in terms of medical treatment for and adjudication of claims for undiagnosed illnesses. This results from adherence to standard medical practices which are inappropriate in this context combined with a current narrowly-defined VA regulation for undiagnosed illnesses. Simply put, doctors are trained to assess, diagnose, and treat patients for symptoms they experience. Their medical training teaches them to focus on and determine what "disease process" is responsible for making a patient ill. Generally speaking, it is an atypical situation when a physician is unable to provide a diagnosis or probable assessment for an illness he or she encounters; however, "undiagnosed illnesses" are specifically associated with Gulf War Syndrome. To be entitled to compensation under 38 C.F.R. § 3.317, the illness must remain undiagnosed. Therefore, the standard medical practice of providing a diagnosis for an ill-defined health problem disadvantages PGW veterans seeking compensation under the undiagnosed illness provision.

Physicians are generally able to provide a diagnosis after a single visit with a patient or following the completion of a series of tests. We may see the term "unknown etiology" or "of unknown origin" occasionally associated with the symptom of fever, but very rarely do we see the phrase "undiagnosed illness" reported in the medical chart of a patient. Our veterans' representatives complain that physicians, striving to adhere to standard medical practice, often offer a diagnosis characterized as a "best possible assessment." Because 38 C.F.R. § 3.317 limits compensation to undiagnosed illnesses, these questionable, perhaps speculative, diagnoses defeat veterans' claims for compensation. We also question how informed VA physicians are regarding the impact of their "assessment" or "diagnosis" on the veteran's ability to be properly compensated by the VA under the provisions relating to compensation for certain disabilities due to undiagnosed illnesses.

Perhaps there is a belief that physicians should diagnose and treat veterans with no regard for the claims adjudication process. However, physicians' medical expertise and opinion greatly impact the outcome of veterans' claims for compensation in the VA system. Therefore, we believe it is essential that the health care provider have a basic understanding of the claims process in relationship to PGW claims for disabilities due to undiagnosed illnesses. When physicians are better informed about this process they may be more likely to acknowledge an ill-defined health problem in a case where they are *not absolutely certain* of a diagnosis.

Veterans often complain that, when they seek VA treatment for symptoms they believe to be associated with Gulf War Syndrome, the examiner refers them to various specialty clinics for further evaluation and treatment without a single case manager being assigned to oversee their health care needs. Others complain that primary care physicians have only a limited amount of time to evaluate a veteran, who often has numerous symptoms and complaints, and for that reason physicians tell the veteran to discuss only the most severe symptoms or his or her top two complaints. There also appears to be bias or prejudice against these veterans by some providers because they doubt the existence of undiagnosed illnesses. Other physicians may provide a "diagnosis" such as fibromyalgia which they believe is a "reasonable probability" given unexplained complaints of musculo-skeletal pain. Finally, some veterans have reported that their doctors are simply unwilling to write "veteran is experiencing an ill-defined health problem with symptoms possibly associated with Persian Gulf Syndrome" because of pressure within the VA health care system as it relates to a medical opinion on the outcome of claims adjudication. These types of scenarios disadvantage the seriously ill veteran suffering with symptoms commonly associated with undiagnosed illness, not only from a medical perspective, but from the claims adjudication perspective as well.

VA health care professionals face a variety of unique challenges when treating a PGW veteran. Physicians often become frustrated when dealing with a chronically ill patient who complains of numerous seemingly unrelated symptoms. These symptom complexes are poorly understood, and patients often do not fit into common modality treatment plans. Health care providers treating PGW veterans face a daunting obstacle because there is currently no known cause or cure for the baffling illnesses their patients are experiencing, and these illnesses are often unresponsive to treatment. A thorough and comprehensive assessment of the PGW veteran is not only crucial to treatment and management of the veteran's illness but also to the veteran's ability to be properly compensated by the VA. This raises the question, has VA tailored its health care and benefits system to meet the unique needs of PGW veterans, or is the VA handling these cases with a "traditional" approach?

To be properly evaluated for Gulf War Syndrome, a veteran needs to have a single case manager who oversees his or her health care needs and fully considers any relationship between their symptoms and service in the Persian Gulf. A physician who evaluates all of the medical evidence relating to a Gulf War veteran complaining of several seemingly unrelated symptoms with initial onset occurring at or about the same time is likely to provide a very different evaluation report from that provided for a veteran who is evaluated by several different physicians with no single case manager to review the evidence. Lack of a holistic medical approach can negatively impact PGW veterans in terms of treatment and claims determination. Also, if a veteran is evaluated by a private physician, there is the possibility the veteran may not relate to the physician that he or she had service in the Persian Gulf, or the physician may think it insignificant because of unawareness of the symptoms typically associated with Gulf War Syndrome and service. Certainly, both of these scenarios could negatively impact the outcome of the medical assessment and entitlement to compensation in the case of a PGW veteran.

The claims adjudication process traditionally is predicated on a medical diagnosis and a relationship or nexus between that disability and military service. Although the VA has issued guidelines for the development and processing of undiagnosed illness claims, we note that the medical assessment is often the determining factor for service connection. In the case of a Persian Gulf veteran's disability claim based on undiagnosed illness, traditional ideology is reversed. The claim now hinges on *a lack of a diagnosis* with findings of chronic symptomatology documented objectively by the health care provider. If, at any point during adjudication, a diagnosis is reported in the medical records for the symptoms in question, the undiagnosed illness claim is subsequently denied. There may be cases where a physician has provided a "probable diagnosis" based on the veteran's symptoms although the true etiology of the symptomatology is questionable or ill-defined in the mind of the examiner.

A case example: A PGW veteran complains of several chronic symptoms lasting over six months that are commonly associated with Gulf War Syndrome, including headaches and fatigue. The veteran reports that headaches and fatigue are the most severe of his symptoms and is referred to a specialist for evaluation and treatment. Testing does not confirm a disease process; however, a "clinical diagnosis" of chronic severe headaches and chronic fatigue syndrome are provided with no comment from the physician as to the etiology of the symptoms. If this veteran was not diagnosed and treated for chronic fatigue syndrome or a headache condition, with documented onset during active service, service connection on a direct basis will most likely be denied. If a diagnosis is provided for these symptoms but no comment exists in the file as to etiology of the headaches, fatigue or *other reported symptoms*, service connection for chronic headaches and fatigue, as related to Gulf War Syndrome, may also be denied. If the examiner objectively reports that chronic headaches and fatigue are accompanied by unexplained recurrent gastrointestinal symptoms and muscle pain—i.e., illnesses of an undefined nature—the claim merits service connection under the undiagnosed illness provision in § 3.317.

Only when a physician acknowledges his or her uncertainty regarding an ill-defined health problem does the PGW veteran have a fair chance at being properly compensated for undiagnosed illnesses under the narrowly-defined provision. We believe a fair assessment of the case in point is that there is a fine line between symptom complexes that result in a diagnostic label and those that do not, given the poorly understood nature of ill-defined health problems associated with Gulf War Syndrome.

Additionally, based on these scenarios, one can see that a veteran's reporting of symptoms and subsequent management of the case by a single health care provider is not only important to accurately accessing the veteran's medical condition, but it also clearly impacts the veteran's case in terms of compensation. We believe some PGW veterans face a real dilemma in getting proper medical treatment for Persian Gulf-related illnesses and in the processing of their claims under the undiagnosed illness provision.

Mr. Chairman, we now turn to a June 1998 letter from House Veterans' Affairs Committee Chairman Bob Stump to VA Secretary Togo D. West, Jr., urging the Secretary to re-examine the Congressional intent of Public Law 103-446, which provides for the payment of compensation to PGW veterans suffering from a chronic disability resulting from undiagnosed illness. Chairman Stump indicated that Congress' intent was to service connect PGW veterans who suffer from symptoms of illness which cannot be clearly defined. The Chairman concluded: "Thus, for the regulation which implements P.L. 103-446 to effectively rule out service connection under that law in any case in which a VA physician happens to assign a diagnostic label associated with an ill-defined illness is to frustrate the purposes of this law, and to raise a serious question of deprivation of due process." We enthusiastically agree.

Most VA health care providers would agree that it is their primary goal to meet the health care needs of the veteran. However, some PGW veterans face problems when seeking medical care for symptoms associated with Gulf War Syndrome. VA health care facilities have limited resources, and Persian Gulf veterans can be disadvantaged in the system although they are a chronically ill patient and have symptomatology that needs to be addressed. The system fails if a physician is unable to dedicate the time and resources necessary to properly assess and treat a chronic, complex, and debilitating illness. The DAV recognizes the unique challenges that VA health care providers face, but that does not excuse a lack of understanding and expertise on the part of a VA physician regarding Gulf War Syndrome. Additionally, although it certainly is not expected that physicians tailor their medical judgment based on the claims process, it is in the best interest of veterans that physicians have a basic understanding of the regulations that govern the process when making medical determinations for PGW veterans.

Many Persian Gulf veterans have suffered tremendously for nearly a decade with unknown illnesses that have dramatically altered their lives and the lives of their family members. As testing and research continue, veterans affected by illnesses associated with Gulf War Syndrome hope that answers will be found and that they will be properly recognized as disabled by the VA as a result of their military service in the Persian Gulf. The VA, under the direction of former Secretary of Veterans Affairs Jesse Brown, quickly and decisively acted to treat and compensate Persian Gulf veterans for undiagnosed illnesses thought to be related to their service in the Persian Gulf. However, many veterans' advocates believe the VA has not been entirely successful concerning treatment of these veterans and subsequent handling of their compensation claims. To date, only 2,934 claims for undiagnosed illness have been approved under 38 C.F.R. § 3.317, with 7,749 claims denied. Given these statistics, it is reasonable to question the overall management of PGW veterans in the VA system in terms of medical assessment and claims adjudication.

These dynamics are not new to veterans. Veterans returning from all our Nation's wars and military conflicts have faced similar problems in attempting to establish the foundation for recognizing the onset of certain conditions as service connected; however, PGW veterans, as a group, appear to be sicker and more severely disabled than their predecessors. The fact that there are still so many unanswered questions after countless studies and extensive research only serves to exacerbate the situation. Many similarly situated PGW veterans appear to have been denied or granted service connection for their poorly defined illnesses based soley on whether their illnesses were or were not diagnosed. Two veterans suffering from similar symptoms may find themselves treated very differently by the health care and benefits systems of the VA. Thus, this group of veterans seems to be greatly disadvantaged because of the confusion and controversy surrounding their illness. This situation is made even worse by VA's narrowly-defined regulation for undiagnosed illnesses.

The DAV recognizes the VA has made a genuine effort to address problems associated with management of PGW veterans' claims. A Joint Memorandum issued by the VA Under Secretary for Benefits and Under Secretary for Health in February 1998 addressed the unique nature of PGW veterans' claims and the necessity for thorough and extensive examinations by health care professionals. We believe that a PGW veteran would greatly benefit from a single case manager combined with a multidisciplinary but holistic health care approach. Equally important and essential is providing continued training for VA health care personnel who treat this veteran population. Providing physicians with information about the claims process and updated research reports concerning PGW veterans will make them better able to medically manage their patients and recognize the important role they play in the final determination of veterans' claims for disabilities due to undiagnosed illnesses. Finally, it is imperative that the VA Secretary reexamine the VA's regulations for disabilities due to undiagnosed illnesses, with a focus on the intent of Congress in P.L. 106-446 to ensure PGW veterans are fairly and properly compensated.

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Testimony
of
Paul Sullivan
Executive Director

Before the
House Veterans' Affairs Committee
Subcommittee on Benefits
October 26, 1999

NATIONAL GULF WAR RESOURCE CENTER
SUBCOMMITTEE ON BENEFITS, OCTOBER 21, 1999

I. Introduction

Chairman, members of the subcommittee, on behalf of the 60 organizations represented by the National Gulf War Resource Center, I appreciate the opportunity to testify again regarding Department of Veterans Affairs (VA) benefits available to Gulf War veterans. In the audience is Charles Sheehan-Miles, our National Secretary, who testified before your subcommittee in 1996.

The work of this subcommittee remains critical. The NGWRC notes with concern that more than 43 percent of Gulf War veterans eligible for VA benefits are seeking healthcare, an unusually high percentage given the excellent health we enjoyed in 1990. Almost one-third of us are ill enough to seek compensation. The NGWRC believes this is an alarmingly high rate worthy of the immediate attention of this subcommittee.

Here are two other highly distressing statistics: first, 72 percent of the claims for undiagnosed illnesses were denied; and, second, 72 percent of the claims for undiagnosed illnesses to reach the Board of Veterans Appeals (BVA) were either granted or remanded. These figures show a very serious error rate at the regional office level. Congress did not intend these results, and the NGWRC finds these results unacceptable.

Sadly, there are more than 130,000 U.S. Gulf War veterans receiving VA compensation, and at least 9,000 confirmed veteran deaths. There are also more than one million military and civilian deaths in Iraq as a result of the continuing nine-year Gulf War.

We wish to thank VA Undersecretary of Benefits Joe Thompson for inviting the NGWRC to his quarterly briefings on VA claims. In general, we support his efforts to streamline VA claims using computers, the Internet, and improved training.

II. VA Gulf War Statistics as of July 15, 1999

4,028,915 Gulf War "era" veterans, August 2, 1990 until present
1,131,859 Gulf War "theater" veterans, August 2, 1990 until present
696,621 Gulf War "conflict" veterans, August 2, 1990 until July 31, 1991
579,210 "conflict" veterans eligible for VA benefits
251,000 "conflict" veterans sought VA healthcare – 43% of those eligible
182,004 "conflict" veterans filed claims against the VA – 31% of those eligible
- 132,891 with one or more S/C conditions – 73% of claims filed
- 89,016 claims approved, 10% or more compensation – 49% of claims filed
- 3,694 claims receiving pension (with & w/o S/C) – 2% of claims filed
- 40,524 claims approved, but zero compensation – 22% of claims filed
- 29,510 claims pending – 16% of claims filed
- 19,260 claims denied in full – 11% of claims filed

10,403 Undiagnosed illnesses claims (PL 103-446)
- 2,566 approved, 10% or more compensation – 25%
- 318 approved, but zero compensation – 3%
- 7,519 denied – 72%

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III. VA Narrowly Interprets PL 103-446

The undiagnosed illnesses benefits law, PL 103-446, allows for the VA to compensate veterans with undiagnosed or not clearly defined illnesses, many possibly associated with Gulf War toxic exposures. Last year, as part of PL 105-368, Congress extended benefits for undiagnosed conditions through December 31, 2001.

However, according to figures provided by the VA, as of June 1999, only 25 percent of the claimants for undiagnosed illnesses received compensation. The high denial rate is unconscionable, as it penalizes those with the most difficult to diagnose medical conditions. It is unreasonable that three-quarters of the claims were rejected. Clearly, this contrasts sharply with the intent of Congress in 1994 when this law was passed.

The NGWRC believes the VA narrowly interprets PL 103-446, to the detriment of Gulf War veterans who have earned service-connected benefits, because in most cases, medical treatment is contingent upon a veteran receiving VA service-connected status for each condition needing treatment. In most cases, the denial of a claim results in a denial of medical care and endless appeals. The NGWRC believes the VA does this by:

1. Denying claims for not "clearly defined" conditions, such as chronic fatigue, multiple chemical sensitivity, amyotrophic lateral sclerosis (a motor neuron disease known as Lou Gehrig's disease or ALS), and fibromyalgia, to name a few. Because these diagnoses are not well defined, they may fall within the standards of evidence needed to grant an undiagnosed or not "clearly defined" illnesses claim.

2. Denying claims for undiagnosed illnesses when a doctor is unable to diagnose the veteran. This has happened even when the veteran has verified and objective symptoms, such as unusual laboratory results.

3. Denying claims possibly misdiagnosed as limited to only psychological or psychiatric issues. This may result from an unfamiliarity of various Gulf War toxic exposures by VA medical professionals as well as miscommunication regarding symptoms between the veteran and the VA physician performing the Compensation and Pension (C&P) exam. While some veterans do have psychological disabilities, there are some toxic exposures that result in neurological damage that may appear similar.

4. Failing in the duty to assist veterans by developing their claims, as we believe is incumbent upon the VA. We understand there is a backlog when requesting military records, from six months to twelve months or longer. The NGWRC believes the VA must go the extra mile to assist Gulf War veterans with these exceptionally difficult undiagnosed illnesses claims, as Congress intended. We note that undeveloped claims occur most frequently when the veteran has no advocate.

Because of the shortfalls, 72 percent of claims for undiagnosed illnesses benefits are denied at the regional office level – then 72 percent are allowed or remanded at the BVA.

As a result of these findings, the NGWRC asks Congress to ask the VA to readjudicate every undiagnosed illnesses claim that was denied *in whole or in part.*

Claims made by Gulf War veterans are 28 percent more likely to be denied when compared to those who served at the same time but not in the conflict. Those in the conflict are 39 percent more likely to receive VA compensation than those who did not deploy - a clear indication of significant medical event(s) during Desert Storm.

The NGWRC agrees with Chairman Bob Stump's letter to VA Secretary Togo West dated June 3, 1998. The VA must adopt more uniform standards to adjudicate Gulf War claims, with the clear note that the VA must find, when there is reasonable doubt, in favor of the veteran.

The NGWRC believes that many Gulf War claims are under-rated, with many veterans receiving a ten percent rating when a more proper may adjudication call for a higher rating. These lower ratings result in many more appeals, further clogging the VA.

The NGWRC thanks Congress for passing the "Persian Gulf War Veterans Act of 1998," PL 105-277, and we urge the House Veterans Affairs Committee to hold hearings on the implementation of this landmark benefits legislation.

The NGWRC believes hearings are vital, as many new benefits may become available as the National Academy of Sciences releases reports on illnesses the NAS finds may be associated with more than 30 toxins, and oversight may be needed.

Until the NAS completes their work, which is expected to last ten years or more, undiagnosed illnesses benefits available under PL 103-446 should have an open-ended presumptive period. Ending undiagnosed illnesses benefits before the NAS completes their task would be premature and possibly deny benefits to tens of thousands of deserving Gulf War veterans.

IV. NGWRC Proposals

There are three main players in every claim brought by a veteran against the VA: the veteran, the veteran's advocate, and the VA. Each must be as trained or as informed as is possible in order for the system to work properly.

Our mutual goal should be for veterans to submit a properly prepared claim, especially for undiagnosed illnesses, with the assistance of a veterans service representative, so the VA may promptly and accurately adjudicate the claim. Then the veteran may obtain healthcare, our main mission, plus compensation, as needed.

The NGWRC believes *Morton v. West* (1999) does not apply to undiagnosed illnesses claims because such claims do not require a diagnosis, and because the law clearly states that a veteran's claim of symptoms represents a well-grounded claim. The NGWRC believes the VA, in order to avoid a completely adversarial system, must have a strong duty to assist veterans with filing claims.

This difference in Gulf War claims requires specific training for VA adjudicators and veterans service representatives as well as outreach to Gulf War veterans. With training, the number of initial mistakes is reduced, thus lowering the number of improper denials and appeals, and possibly shrinking the huge backlog of claims at the VA

A. GAO Investigation of Gulf War Claims

Toward that end, the NGWRC proposes Congress task the General Accounting Office (GAO) to investigate the apparent discrepancy between the intent of Congress and our view of the less than optimal implementation of PL 103-446. Congress may want to ask the GAO to suggest ways to improve the undiagnosed illnesses claims process. Plus, if solid, reliable statistics are developed, this may serve as a baseline to determine the effectiveness, if any, of any proposed training program that may be implemented.

Such a probe may want to focus on:

a. the reasons for denials cited by VA (such as presumptive period, not well grounded, failure to assist or develop, or having an existing diagnosis)
b. the number of each type of condition claimed (such as "x" number of diagnosed conditions and "y" number of undiagnosed conditions)
c. variables within the veterans population (such as service branch, gender, age, race, rank, deployment dates, and deployment locations, and the number and type of diagnosed and undiagnosed issues in each claim)
d. the impact of VSOs on the claim (such as the approval, denial, appeal, and pending claims rates with and without VSO representation)
e. the level of development (such as did a VSO, the VA, or both assist the veteran with development)
f. the number of VA personnel fully qualified to adjudicate such claims (such as determining if there are enough, and do Gulf War claims require additional time)

B. VA and VSO Training & Gulf War Veteran Outreach

The NGWRC believes a current VA training manual, *A Guide to Gulf War Veterans' Health*, published in April 1998, overemphasizes stress, neglects toxic exposure research, and neglects claim verification reporting procedures for undiagnosed conditions. The NGWRC has confirmed several incidents where VA physicians, many involved with Gulf War Registries or C&P exams, who are unfamiliar with the VA's *Guide*.

Further, the NGWRC proposes the VA undertake to develop and implement, within the next year, a new training program with the cooperation of VSOs and Gulf War veterans.

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As part of reaching out to veterans, the NGWRC began distributing more than 20,500 free copies of our Guide for Gulf War Illnesses in 1996. Our on-line version has been visited more than 200,000 times.

The VA, in addition to their occasional newsletter, should consider outreach at the local level, such as with the Persian Gulf Family Support Program that expired in 1994, as there appears to be a 'disconnect' between policies originating from the VA Central Office and local regional offices.

To the best of our limited ability, the NGWRC performs outreach, including training for veterans representatives working for the Vietnam Veterans of America. Veterans, VSOs, legislators, the public, and the press find our *Guide* highly informative and very helpful.

The first piece of advice given to veterans in our *Guide* is that veterans should seek help from a professional veterans advocate. We also believe our *Guide* is an important first step in the process of making undiagnosed illnesses claims a smoother process.

V. Six Other Benefits Issues Related to the Gulf War

1. The NGWRC urges Congress to amend 38 CFR Section 3.317 and allow claims by U.S. veterans who served exclusively in Israel and Turkey since August 2, 1990. The DoD defines these two nations as the Gulf War theater, but the VA does not. This creates confusion in the claims process, as many of these veterans experienced toxic exposures, and some have undiagnosed conditions. The VA's actions have resulted in unreasonable denials for benefits.

2. The NGWRC urges Congress to pass legislation to re-classify as "former prisoners of war" approximately twenty U.S. veterans who were taken prisoner by Iraq and held between August 1990 until as late as December 1990, thus making them eligible for expanded VA benefits. At present, the DoD classifies them as "beleaguered." This does not reflect they were held by Iraq's military during the Gulf War as defined by PL 102-25.

3. The NGWRC urges Congress to extend the part of PL 103-446 calling for medical evaluations of spouses and children. As the GAO found last year, the VA is slow to implement this program, which expires December 31, 1999. The NGWRC believes ending the program is premature. The data generated, in conjunction with recent DoD admissions of multiple, widespread toxic exposures, may prove essential.

4. The NGWRC thanks Congress for requesting a GAO probe into depleted uranium exposures and Gulf War illnesses. The NGWRC urges Congress to hold hearings on this matter when the GAO releases their report early next year. The NGWRC believes many Gulf War veterans may be denied VA benefits for depleted uranium exposures due to the DoD's failure to follow many regulations in place during the Gulf War.

5. In a related manner, the NGWRC notes with alarm how the Department of Energy apologized to DoE workers for DU exposures. The DoE offered safety training, healthcare, and compensation to exposed DoE workers. In stark contrast, there is no verified DoD training for DU hazards, the DoD refuses to consider medical research, there is no known standardized reporting method for documenting or evaluating DU exposures, and there is certainly no compensation. The NGWRC urges Congress to consider asking the secretaries of Defense, Veterans Affairs, and Energy to comment on this disparity between those who work or worked for the military and those who work or worked for the Department of Energy.

6. The NGWRC thanks the House for passing the "Gulf War Veterans' Iraqi Claims Protection Act of 1999" as part of the Embassy Security Act. The legislation is pending in a House-Senate Conference. If enacted, this will allow veterans and families to file claims against an estimated $1.45 billion in assets seized from Iraq after Iraq invaded Kuwait in August 1990. Until a distribution plan is enacted, veterans (many who had their claims denied for undiagnosed illnesses) will not have access to this one-time additional source of benefits. The NGWRC urges Congress to include the "Claims Protection Act" in any final conference language enacted this year.

VI. Conclusion

I ask permission to introduce a few documents for the record. First, our ***Self Help Guide for Gulf War Illnesses***. Second, our ***Depleted Uranium Exposures Case Narrative***. And, third, a few research articles and some correspondence between the NGWRC and the Administration.

The NGWRC is pleased to be a resource to your staff on issues related to the Gulf War. Chairman, that concludes my comments. I will be happy to answer any questions.

End

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Funding Statement
October 26, 1999

The National Gulf War Resource Center, Inc. (NGWRC) has not received any Federal grant or contract during the current or previous two fiscal years

The NGWRC is registered with the Secretary of the Senate and the Clerk of the House of Representatives.

The NGWRC was founded on June 28, 1995 in the District of Columbia, and it was incorporated on November 21, 1995 in the District of Columbia.

The NGWRC received our certification for non-profit status as a 501(c)(3) from the Internal Revenue Service on March 31, 1997.

Further information regarding the NGWRC should be address to our Washington, DC headquarters.

Self-Help Guide for Gulf War Illnesses

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Third Edition (Revised): October 1999

Thank you for requesting a copy of the Third Edition of the National Gulf War Resource Center's highly successful *Self-Help Guide for Gulf War Illnesses*. If you are an ill Gulf War veteran, a family member, or friend, you should find this *Guide* helpful in navigating this complex issue.

The NGWRC distributed 20,000 free printed copies of our first two editions of our *Guide*, and more than 100,000 visitors viewed it at our Internet website. Free copies are available at many state and local government offices providing assistance to veterans. Please visit our website for constant updates regarding important research and benefits.

Our Mission and History

Our Mission: The National Gulf War Resource Center is an international coalition of advocates and organizations providing a resource for information, support, and referrals for all those concerned with the complexities of Persian Gulf War issues, especially Gulf War illnesses and to continue in the search for a better accounting of those who have yet to return home from the Gulf War.

Our History: The NGWRC was founded on June 25, 1995 as a coalition of 17 grassroots veterans groups seeking answers and medical treatment for the tens of thousands of veterans reporting Gulf War illnesses. By 1999, the NGWRC had evolved into a widely respected, incorporated, non-profit coalition representing 60 groups in the United States and United Kingdom.

The NGWRC is based in Washington, DC, in the same building as the Vietnam Veterans of America (VVA). Most of our income is from individual contributions from Gulf War veterans and supporters. The NGWRC is tax-exempt, and donations to the NGWRC are tax deductible.

The NGWRC receives grants from the VVA, Veterans of Foreign Wars, Eastern Paralyzed Veterans of America, and various foundations. The NGWRC does not receive any government funding.

About our new *Guide*

The updated *Guide* is a unique tool providing Gulf War veterans, family members, and those assisting them with information to consider when making decisions regarding the impact of Gulf War illnesses upon our lives.

The new *Guide* contains information about toxic exposures, research, treatment, and benefits available through various government agencies, and it is specific to the needs of Gulf War veterans and family members.

With the extension of the "Veterans' Benefits Improvement Act of 1994," Public Law 103-446, the passage of the "Persian Gulf War Veterans Act of 1998," Public Law 105-277, and the "Veterans Programs Enhancement Act of 1998," Public Law 105-368, there are many significant changes in benefits for Gulf War veterans. These new laws are discussed further in another section of the *Guide*.

By 1999 more than 110,000 veterans reported health problems associated with their service during the Gulf War

General information about filing a claim for benefits with the Department of Veterans Affairs can be obtained from major veterans' organizations, such as the Veterans of Foreign Wars, Vietnam Veterans of America, Disabled American Veterans, The American Legion, and others.

The NGWRC Guide is not designed as legal advice for veterans filing claims against the Department of Veterans Affairs. The Guide provides the latest information on toxic exposures, statistics, new laws, when are how to get help, local support groups, and other referral information. The Guide is designed to supplement the superb information already available from major veterans' groups.

Our first suggestion, repeated throughout this Guide, is to set up a meeting with a veterans representative with a Veterans Service Organization (VSO), such as those listed on the back page of this guide, to discuss benefits available to your as a result of your military service."

Our Sponsors

The *Third Edition of the Gulf War Illness Self-Help Guide* was made possible through a grant from the Vietnam Veterans Assistance Fund.

The NGWRC thanks the VVAF and other sponsors listed in the *Guide* for their generosity.

Prior editions were sponsored by the Eastern Paralyzed Veterans of America, Gulf War Veterans of Georgia, Veterans Speakers Alliance, Calypte Biomedical, Veterans of Foreign Wars Post 2681, Service Employees International Union, Swords to Plowshares, Chemical Weapons Working Group, Gulf War Research Foundation, and Jim Tuite.

Gulf War Illnesses Defined

Gulf War veterans' illnesses, sometimes called "Gulf War Syndrome" or "Desert Storm Diseases," are a collection of symptoms and illnesses reported by veterans to private and government healthcare providers since August 1990.

According to the Department of Veterans Affairs (VA) and Department of Defense (DoD), by 1999 more than 110,000 veterans had reported health problems associated with their service during the Gulf War. From 1991 until 1999, more than 250,000 have visited a VA medical center for medical care since 1991. From 1991 until 1999, about 180,000 have filed a claim with the VA for medical and disability benefits.

Gulf War illnesses are most likely not a single, new disease. Rather, many leading scientists believe the illnesses reported by veterans are most likely a collection of different illnesses with similar or overlapping symptoms. Many of the illnesses are associated with single and/or overlapping toxic exposures.

Lack of Data Creates Problems

The multiple toxins present in the Gulf War create considerable confusion among veterans, researchers, and the public, making it difficult to provide a single case definition or effective treatments.

The Department of Veterans Affairs and Dr. Robert Haley (an independent researcher with the University of Texas Southwestern Medical Center) have formulated case definitions. However, they differ in some respects.

Seriously complicating the matter is the failure of the DoD and VA to be candid with veterans about the number and extent of the toxic exposures. At the request of the NGWRC, the DoD established a hotline for veterans to call with information regarding toxic exposures and incidents: (800) 472-6719. The NGWRC encourages veterans with any relevant information to contact the NGWRC or the DoD hotline (operated by the Office of the Special Assistant for Gulf War Illnesses — OSAGWI).

Examples of Missing Data

The first example of this was the constant DoD denials, until 1996, of widespread exposure to low-levels of chemical warfare agents to as many as 100,000 U.S. troops.

The second example was the constant denials, until 1998, of widespread exposure to as many as 436,000 U.S. troops to depleted uranium radioactive toxic waste contamination.

The third example was the failure of the DoD to keep adequate records of those receiving investigational new drugs, such as the pyridostigmine bromide (PB) pill or the botulinum toxoid vaccine. For many other toxic exposures, the DoD failed to record the type, amount, and length of time of exposure. The DoD also failed to monitor the effects of oil well fire pollution on soldiers who served during the invasion of Iraq in February 1991, who, in many cases, lived in heavily polluted areas for two months or longer. This information is missing; thus complicating the ability of most researchers to investigate the illnesses based on dosage and time.

Treatment: By September 1999, there were two treatment trials underway at the VA. The first involves intensive psychotherapy, and the second involves the use of antibiotics.

However, there are no official VA or DoD standardized treatment programs. Most physicians treat veterans and family members according to their toxic exposure histories and symptoms.

For further information about VA treatment programs, call (800) PGW-VETS. For the DoD, call (800) 796-9699.

Main Types of Toxic Exposures

There are a number of exposures examined in detail in this updated *Guide*. There have been many new developments since our Second Edition of the *Guide* in 1997. The following statistics regarding exposures were compiled from DoD and VA reports.

Unfortunately, for many toxins, such as pesticides, chemical agent resistant coating (CARC), and others, there are very few published medical research reports at this time, although some studies have started as a result of pressure from veterans groups such as the NGWRC.

Veterans should report any of these toxic exposures listed below to their healthcare provider as well as to the DoD or VA as part of any claim for benefits.

Other exposures included pesticides, diesel fuels, and chemical agent resistant coatings (CARC). A complete list of the known and suspected toxins is available in this *Guide*, and uodates may be found on our website. Clearly, as many researchers comment, the Gulf War theater was a "toxic soup" or "toxic cocktail" mixture that is associated with the illnesses among Gulf War veterans.

Type of Exposure	Number of Possible Exposures
A. Chemical Warfare Agents	100,000
B. Investigational New Drugs	
1. Pyridostigmine Bromide (PB) Pills	250,000
2. Botulinum Toxoid Vaccine	8,000
C. Anthrax Vaccine	150,000
D. Depleted Uranium (DU)	436,000
E. Oil Well Fire Pollution	696,000
F. Local Diseases	unknown

Here is a more detailed explanation of several of the major exposures faced by veterans:

A. Chemical Warfare Agents

The NGWRC, our member groups, and many individual veterans uncovered documented chemical incidents and casualties using the Congressional reports, the Freedom of Information Act (FOIA), and information provided to us from individual veterans.

As a result, by 1997 the DoD was forced to admit 100,000 U.S. troops were exposed to low-levels of sarin, cyclosarin, and mustard agents during the demolition of an Iraqi military bunker complex at the Kamishiyah depot in March 1991. In 1999, the VA increased the number to more than 124,000. According to the DoD, there were more than 900 demolition 'events,' during post-cease-fire mop-up operations in March and April 1991. As many as 30 of those events may have involved the demolition of chemical warfare agents. The NGWRC is pressing for a full investigation into these incidents.

Over the last several years, the NGWRC research campaign resulted in the DoD revamping their entire Gulf War Illnesses investigation. By 1999, the DoD employed a staff of more than 150 and a budget estimated at $90 million to investigate the thousands of toxic exposure incidents, many brought to light by NGWRC research volunteers.

The Office of the Special Assistant for Gulf War Illnesses (OSAGWI) is handling the current DoD investigation and their phone number is (800) 472-6719. At the same time as the NGWRC Conference in Atlanta in November 1997, President Clinton announced the appointment of a Presidential Special Oversight Board (PSOB) to review the work of OSAGWI. The PSOB number is (703) 696-9470.

Official military documents obtained from Congressional reports, using FOIA, or letter sent by Gulf War veterans have revealed:

- the U.S. Departments of State, Defense, and Commerce allowed the shipment of dual-use chemical precursors and technology to Iraq until 1990.
- possible offensive use of chemical warfare agents by Iraq against Israel, according to Central Command Nuclear, Biological, and Chemical incident log ("CENTCOM NBC log") compiled between January and March 1991;
- possible deployment of chemical warfare agent land mines by Iraq, according to CENTCOM NBC log;
- deployment of chemicals to southern Iraq and northern Kuwait by Iraq, according to a casualty report on March 5, 1991;
- exposure of Coalition troops and civilians to chemicals due to Coalition bombings of Iraqi manufacturing and storage facilities during the air war, according to a report and Senate investigation led by former Senator Donald Riegle; and
- Exposure of troops to chemicals from artillery and other bombardment and/or exposure of troops to chemicals as a result of post-cease fire demolitions, according the CENTCOM NBC log.

In spite of the overwhelming evidence of widespread poison gas exposures, the DoD continues to downplay the seriousness of these exposures. Documented evidence suggests the Pentagon possessed prior knowledge, before the air war, of the potential for chemical releases and the subsequent health problems that could be caused by exposure to low-level chemical warfare agents, according to a report prepared by the Lawrence Livermore Laboratory in California.

In 1996, the NGWRC called for the appointment of a special prosecutor from the Department of Justice to investigate the misplacement, concealment, or destruction of government documents related to chemical and biological agent incidents and exposures. As a result of our request, the DoD Inspector General is currently investigating possible DoD wrongdoing. The NGWRC continues pressing for answers regarding the hundreds of pages missing from the CENTCOM NBC log.

Part of the problem dealing with chemical exposures was the DoD's mistaken doctrine that a soldier must experience visible and severe effects (such as death) when exposed.

As a result of the work of the NGWRC documenting exposures plus recent research (such as the work by Robert Haley, MD and Howard Urnovitz, Ph.D.) demonstrating effects from low-level exposures, the DoD has funded some medical research and the DoD is re-evaluating their low-level chemical exposure doctrine.

As a result of NGWRC's efforts, a law was passed in 1998 should result in new alarms, other new equipment, and better training and awareness for soldiers as result of the low-level chemical exposure doctrine review.

B. Investigational New Drugs

In December 1990 the Food and Drug Administration (FDA) issued a waiver to the DoD allowing the military to administer "investigational new drugs" (INDs) to U.S. troops without obtaining informed consent.

As part of the FDA waiver given to the DoD, the Pentagon agreed to keep records of who recevied the investigational new drugs and then to conduct evaluations to determine the side effects, if any. The DoD failed to live up to the FDA waiver agreement.

The NGWRC understands the intent of the DoD to provide the best possible protection to U.S. troops deployed overseas. However, the NGWRC filed suit to require the DoD to follow other U.S. laws and the Nuremberg Code. Both require informed consent from the patient before an IND is used.

Informed consent means telling the soldiers what they are getting, why they are getting it, maintaining adequate records, and providing any needed medical care.

On October 17, 1998 PL 105-261 was enacted, requiring the President of the United States to issue a Finding before any INDs are used on military personnel. Thus, Pyridostigmine Bromide (PB) and Botulinum Toxoid (BT) cannot be used at present.

This represents a victory for Gulf War veterans and the NGWRC.

(1) Pyridostigmine Bromide (PB)

Pyridostigmine Bromide (PB), a nerve agent pretreatment drug, was a small white pill issued to U.S. and U.K. troops in blister packets. According to the DoD, as many as 250,000 U.S. troops took PB pills. The DoD failed to follow the FDA waiver, and very few records exist documenting who took how many of these pills.

Approved only for use in cases of a severe neurological disorder known as myasthenia gravis, PB has never been tested or approved for use on normal populations to protect against chemical warfare agents -- this is why it has IND status.

In the few limited tests conducted prior to the war by the DoD, women, smokers, and anyone who might be at all sensitive to the drug were not allowed to participate. Despite screening, some adverse effects were noted.

Some researchers believe pre-treatment with PB is only effective in relation to exposure to soman and they claim it may increase adverse effects of sarin. In 1994, the Senate Veterans' Affairs Committee issued a report on PB pills.

Recent research conducted in Israel concluded that in times of psychological or physical stress, PB may have a greater impact on the brain.

The NGWRC has called for more research into PB, especially the effects of PB taken at or near the same time that pesticides were used. A recent DoD report confirms the NGWRC's position that PB should be studied further.

(2) Botulinum Toxoid Vaccine

The Botulinum Toxoid (BT) vaccine is also an IND. According to the DoD, approximately 8,000 US troops received this vaccine.

Again, the DoD failed to comply with the FDA waiver, and few records were kept showing who received the BT vaccine.

The NGWRC is not aware of any research underway or completed regarding the long-term effects of the BT vaccine.

C. Anthrax Vaccine

The anthrax vaccine is only approved by the FDA for skin-contact exposures. The vaccine was administered to approximately 150,000 U.S. troops in 1990 and 1991, according to the DoD.

Very few records were kept showing who received it, when it was given, or which lot of vaccines were used on U.S. troops. Many records were not kept due to a mistaken belief by some military health-care providers that the anthrax vaccine was a classified matter, according to the DoD.

After nine years, there are no completed or on-going studies regarding the long-term effects of the anthrax vaccine.

In 1997, the DoD began a mandatory anthrax vaccine program for all 2.4 million active duty, reserve, and guard troops.

This program remains highly controversial as a result of the failure of the DoD to keep adequate records during the Gulf War as well as the failure of the DoD to consider or to conduct long-term medical research on the adverse effects of the anthrax vaccine.

There are additional reports, according to the General Accounting Office (GAO), regarding the possibility that the DoD added synthetic squalene to the anthrax vaccine.

The DoD denies tampering with the vaccines. The synthetic additive is not FDA approved. This matter remains under investigation. Veterans can contact the GAO, their Senators or Representative, or the NGWRC for further information.

Since the DOD's introduction of the 1997 Anthrax Vaccination Program (AVIP), hundreds of soldiers, sailors, airmen, and marines have reported adverse reactions, some severe and life threatening.

At press time, more than 300 active duty, national guard or reservists have resigned or retired rather than willingly take the anthrax vaccine, largely due to the DoD's damaged credibility with regards to Gulf War illnesses.

Short term adverse reactions reported by recipients of the anthrax vaccine include: extreme fatigue; local pain at the injection site with swelling and pain extending into other parts of the body; muscle and body weakness; dizziness; heart failure; nausea and vomiting; fever; blurred vision; general malaise. It is unclear which effects are directly the result of the vaccination.

Long-term side effects being reported by some recipients of the anthrax vaccine include: extreme fatigue; concentration and memory impairment; dizziness; joint and muscle pain; nausea; muscle and body weakness; blurred vision; general malaise.

It is unclear which effects are directly the result of the vaccination. Report adverse reactions to your health-care provider. Consider contacting the Food and Drug Administration (FDA) for a form to submit a written adverse reaction incident."

D. Depleted Uranium (DU)

Depleted uranium (DU) is a radioactive toxic waste product used as an anti-tank weapon. Fired by tanks and attack airplanes, more than 640,000 pounds (about 300,000,000 grams) of DU were expended on the Gulf War battlefield. The U.S. government states exposure of .01 gram in one week can cause health problems.

Each U.S. DU round fired by our M-1 series tanks creates as much as 3,100 grams of fine radioactive toxic dust upon impact. Many research studies show that inhaled DU dust, which is insoluble and may remain in the body for years, may be the most serious form of exposure.

During the Gulf War, several military regulations required that soldiers entering areas known or suspected to be contaminated by radioactive materials have their medical records noted and that soldiers be provided medical tests to determine the level of exposure, if any.

Despite repeated pre-Gulf War warnings, the military failed to follow the law, and there no known records of the length or level of DU exposures. The lack of reliable data remains the main obstacle to researchers investigating DU poisoning.

In March 1996, the NGWRC produced information showing as many as 436,000 U.S. troops may have been exposed to DU. At first, the DoD hotly disputed this, but now the DoD claims that DU exposure among US troops took place, but not at significant levels.

As many as 436,000 U.S. troops entered areas contaminated with DU radioactive toxic waste.

However, by November 1998, the DoD (through the Office of the Special Assistant for Gulf War Illnesses – OSAGWI), released a map confirming as many as 436,000 U.S. troops entered into areas heavily contaminated by fine particles of DU radioactive dust.

In conjunction with Swords to Plowshares and the Military Toxics Project, the NGWRC has published the results of an extensive investigation into DU contamination. Our report, "Depleted Uranium Exposures Case Narrative," is available at our website, http://www.ngwrc.org.

Exposure to DU armor and/or penetrators may be dangerous. DU poses the greatest potential to cause health problems among people who:

- Are in a friendly fire incident involving DU rounds;
- Breathe smoke or dust from a burning vehicle hit by DU rounds;
- Eat food or drink water contaminated by DU dust;
- Climb on or enter a vehicle or bunker hit by DU rounds;
- Collect, handle, or participate in cleaning up spent DU fragments or penetrators;
- Breathe smoke or dust from a fire involving DU armor and/or rounds, such as the July 1991 fire at Doha, Kuwait;
- Treat those injured by DU shrapnel (many covered with dust); and
- Maintain or repair of vehicles struck by DU rounds.

Recently published and/or released information from the Armed Forces Radiobiology Research Institute (part of the DoD), plus findings from a VA follow-up program at the Baltimore, Maryland VA, show evidence that:

- In animal studies, DU settles in the bone, brain, lung, muscle, kidney, liver, and testicles;
- In animal studies, DU transforms cells into a tumorigenic phenotype;
- DU cells form tumors in mice;
- In animal studies, DU is mutagenic;
- In animal studies, DU is associated with reduced litter size;
- From the results of animal studies, strong evidence exists to support a detailed study of potential that DU is associated with cancer;
- In follow-up on Gulf War veterans, DU was found in semen; and
- In follow up on Gulf War veterans, elevated DU in urine is linked to increased neurological problems.

In 1996, the Presidential Advisory Committee on Gulf War Veterans' Illnesses (PAC), concluded that there may be an increase in the number of cases of lung cancer among Gulf War veterans due to exposure to depleted uranium radioactive toxic waste dust.

The NGWRC repeatedly requested research into DU exposures, and the leaders at the DoD refused. One refusal came during a face-to-face meeting on April 15, 1999 between Bernard Rostker, the head of OSAGWI, NGWRC President Chris Kornkven, and NGWRC Executive Director, Paul Sullivan. Without citing a single medical research paper, the DoD simply claims that DU "saves lives," is "safe," and there is "no need" for additional medical research.

In April 1999, the deputy director of OSAGWI, retired Army Lieutenant General Dale Vesser, refused to allow NGWRC leaders to meet with OSAGWI staff to discuss and review DU training programs. The NGWRC later discovered that the DoD is unable to verify that DU training has started, even though this training is required by a new law. The NGWRC pressed for enactment of the training law in 1998.

By July 1999, the Pentagon refused to respond to any further requests from the NGWRC regarding DU, citing national security and on-going litigation over the use of radioactive toxic waste as ammunition.

In a related manner, the Presidential Special Oversight Board, chaired by former Senator Warren Rudman, with retired Army Colonel Michael Naylon as Executive Director, refused to consider new research into DU exposures. Naylon refused to consider new research into respiratory problems, adverse reproductive outcomes, or increases in cancer among Gulf War veterans during a face-to-face meeting on August 27, 1999.

The PSOB, created in November 1997, is following up on the incomplete and highly criticized Final Report of the PAC issued in January 1997.

The PSOB, on August 27, 1999, issued a brief report claiming there was no link between DU and Gulf War veterans with undiagnosed conditions. However, the PSOB failed to cite a single medical study on Gulf War veterans exposed to DU or Gulf War veterans with undiagnosed illnesses to support their claims. The PSOB followed the same pattern as OSAGWI when OSAGWI made similar baseless assertions in August 1998.

There is some limited research being conducted by the Armed Forced Radiobiology Research Institute (part of the DoD, and cited above), and the NGWRC has copies of their published reports available for free.

In 1993, at the request of Gulf War veterans and the GAO, the VA began a follow-up program among a very small group of 33 Gulf War veterans involved in friendly-fire incidents. By September 1999, more Gulf War veterans continue stepping forward who were injured by DU shrapnel -- many were never informed the shrapnel in their bodies was DU. Many of these veterans were not evaluated for contamination levels until 1999.

In addition to the Baltimore program, the VA recently launched a DU testing program, and veterans who believe they may have been exposed should call the VA at (800) PGW-VETS or the DoD at (800) 472-6719 for further information. If the VA or DoD do not respond to your call within one week, write a letter to your military commander or your local VA medical center and request the DU test.

Although testing results for the presence of DU in urine may be ineffective after so many years, the NGWRC strongly encourages participation in this testing program. Part of the DU testing involves a lengthy questionnaire, and the results of the questionnaire may force the VA or DoD to presume you were exposed, even if the test results are negative.

The General Accounting Office, the investigative arm of Congress, is investigating the depleted uranium issue, and they are expected to publish their findings in the year 2000.

E. Oil Well Fire Pollution

Almost every Gulf War veteran remembers the huge plumes of smoke from the oil well fires. In many cases, the sun was blocked for days at a time and breathing was difficult for many.

No medical research is completed or underway regarding the effects of oil well fire pollution, especially particulate matter, among Gulf War veterans who served between February and April 1991, when most of the more than 700 oil well fires raged out of control and the pollution was arguably the heaviest.

While the first known DoD meeting on the hazards of the Kuwaiti oil well fires was in February, 1991, DoD did not begin actively monitoring oil well fire pollution until May 1991, after almost all of the 696,000 U.S. troops who fought in Desert Storm had already departed Southwest Asia. The DoD continued to monitor the pollution levels until December 1991, more than a month after all the fires were extinguished in November 1991.

The DoD has since created an unrealistic and highly questionable "average level" of oil well fire contamination measurement for the time period between March to December 1991. Using this faulty "average level," the DoD declared the hazard levels to be within acceptable government limits, without citing a single medical study on Gulf War veterans exposed to oil well fire smoke and particulates between January and June 1991.

However, a closer examination of the actual data, obtained only through the use of the Freedom of Information Act, shows that measured levels of some hazards from the oil well fires frequently "spiked," dramatically exceeding safe standard levels for hours or even days at a time. In perhaps the most dramatic example from the available data, particulate matter measured directly in the plumes, which frequently touch ground in troop areas, was measured at 21,000 micrograms per cubic meter.

This level is more than 80 times the safe maximum level of 260 micrograms per cubic meter. Due to a lack of DoD effort in accurately measuring oil well fire contamination, and despite DoD's own February 1991 recommendations, we may never know how often troops were exposed to such exceptionally high levels of hazardous contamination.

While the medical literature is clear regarding known health outcomes of particular toxic hazards from within the oil well fires, the lone existing DoD report on Kuwaiti oil well fire contamination skirts around the hazards, brushing them away to a few sentences of cursory acknowledgement buried deep within the 130 page document. Again, there is no published medical research supporting the DoD's claims.

The DoD has largely failed to analyze or publicize existing data from multiple sources, including EPA and others, regarding the significant hazards of the exceptionally high levels of particulate matter in the air while the Kuwaiti oil well fires were still burning.

The NGWRC continues to request acknowledgement of existing data and additional research into this area. Anyone with exposure data or other information on this topic is asked to contact the NGWRC.

F. Environmental Exposures

Soldiers and civilians in the Persian Gulf region were exposed to a wide variety of toxic substances in varying degrees, including pesticides, chemical agent resistant coating (CARC), diesel fuel, and others.

There were also combinations of exposures, including the interaction between PB pills given troops and various insecticides, such as DEET. Several studies report that the toxicity of either agent alone is not as great as when they are used in combination.

When combined, a synergistic effect takes place and the toxicity of each increases up to 10 times. This means that ingesting the PB pills and using DEET may be far more hazardous than using either one alone.

Other exposures include the spraying of diesel fuel to reduce dust, diesel fumes from stoves inside tents, the spraying and liberal use of pesticides, fumes from repainting vehicles with CARC, red fuming nitric acid, and other toxins. More toxins are listed later in this *Guide*.

G. Leishmaniasis and Endemic Diseases

Deployment to the Gulf region also meant possible exposure to local diseases. Leishmaniasis is a parasitic infection borne by sand fleas. The disease has an extremely long dormancy period of seven years or more.

It manifests with non-specific symptoms such as chronic fatigue and rashes. It can be difficult to diagnose and treat, and can be fatal if not diagnosed and treated properly.

The VA found in one study that leishmaniasis turned up in larger than expected numbers among Gulf War veterans. There is no easy non-invasive diagnostic test, so the number of diagnosed cases may be far lower than the actual incidence.

Many physicians are not aware that the type of leishmaniasis typically borne by veterans of the Gulf region is unusual and needs specialized testing only performed by the Centers for Disease Control (CDC). Other diseases endemic to the area include brucellosis and cholera. To date, we know of few Gulf veterans diagnosed with either disease.

Current Statistics on Gulf War Veterans

Not all veterans who served in the Gulf War are ill. Of the 697,000 U.S. troops who served in the Gulf War, approximately 110,000 enrolled on the DOD and VA Gulf War illnesses registries.

By July of 1999, according to the VA, of the 696,000 "conflict" veterans who served between August 2, 1990 and July 31, 1991, about:

- 579,000 are discharged and eligible for VA benefits, including medical care;
- 251,000 of the 554,000 sought VA medical care;
- 182,000 of the 579,000 filed VA disability claims – of those, 133,000 were approved; 30,000 are pending; and 19,000 were denied;
- 9,000 Gulf War veterans have died;
- Those in the theater are between 4 and 16 times more like to report certain medical problems, according to the CDC;
- Those in the theater are 39 percent more likely to receive VA medical benefits than those who did not deploy;
- Those in the theater are 28 percent more likely to have their VA claim denied.

This may not reflect the true number of veterans seeking medical treatment, as it does not account for individuals that have sought medical care from private physicians outside the VA or DoD systems. Veterans from the United Kingdom, Canada, Australia, Czechoslovakia (now the Czech Republic), and many other Coalition countries also report Gulf War illnesses.

Civilians

Civilians present during the Gulf War had many of the same exposures as military personnel to chemical, biological and radiation contamination, endemic infectious diseases, and other toxic materials. Civilian participants include journalists, DOD contractors (such as logistics assistants representing the defense industry), Red Cross workers, and Iraqi and Kuwaiti civilians living in the area.

Other civilians possibly exposed include those at or Coalition or U.S. military bases or contract facilities who cleaned and repaired returned tanks and airplanes, repackaged returned parachutes, sorted, cleaned, repaired and painted returned equipment, and removed clothing and equipment from the evacuated, injured and dead.

The government's response to ill civilians is very slow. Although some may be eligible for workers' compensation or Social Security benefits, the evidence needed to show exposure to contaminated personnel or equipment is difficult to provide, and scientific studies relating to civilian participants is almost non-existent.

The NGWRC actively shares information with deployed civilians in an effort to press for proper answers and medical care. The NGWRC continues to press for research into the health problems reported by civilians.

Family and Close Living Contacts

A survey of 1,200 ill veterans performed in 1994 by former U.S. Senator Donald Reigle reported that 77% of spouses and 68% of children born after the war were experiencing similar symptoms to those of the ill veterans or birth defects.

Other surveys have indicated similar disturbing trends. While not scientific studies, these surveys indicate an incidence of illness among family members of ill veterans. The Association of Birth Defect Children (ABDC) is conducting a research study on this issue. Those with information regarding a Gulf War veterans' child with birth defects should contact ABDC in Florida at (407) 245-7035.

A possible exposure source for families and close contacts may be exposure to the veteran's equipment contaminated during Gulf War service. Another risk factor may be infectious diseases contracted by the veteran while overseas.

Female spouses of Gulf War veterans have reported a high rate of miscarriages, menstrual difficulties, reproductive problems, and burning semen during intercourse. Several other studies are currently being conducted on birth defect rates and burning semen.

Spouses of active duty personnel are eligible for medical care through the DoD. A small number of spouses and children of Gulf War veterans are receiving only health exams (not medical care or disability benefits) through the VA. For information on this program, call the VA at (800) PGW-VETS.

Note: In some cases spouses or children of veterans may receive VA benefits, usually when the veteran is seriously disabled or deceased — please contact your veterans representative for details.

The NGWRC pressed for an extension of the program in 1998, when it was set to expire. Due to NGWRC's efforts, the program was extended until December 31, 1999. There is no healthcare or compensation program for ill family members of sick Gulf War veterans.

Due to the documented slow response of the VA to implement the program (based on a GAO report), the NGWRC is pressing for another extension of the program.

Communicability and Blood Ban

In 1991, a ban on all blood donations from veterans was initiated by the DoD to protect the U.S. public from exposure to a variety of new and old infectious diseases. By 1993, the National Association of Blood Banks (NABB) lifted the ban, claiming the public health threat no longer existed.

There is no consensus on the communicability of illnesses related to the Gulf War. In 1994 the National Institutes of Health recommended an investigation of the reestablishment of the blood ban.

Some medical researchers and veterans groups, including the NGWRC, have found specific primary and opportunistic infections prevalent among Gulf War veterans. The NGWRC believes it is prudent that veterans do not donate blood, blood products, or organs.

Common Complaints

There is a large body of symptoms associated with the exposures faced by Gulf War veterans. A survey of more than 10,000 ill veterans by the Operation Desert Shield / Desert Storm Association found eleven symptoms at least 80% of surveyed veterans experienced: sleep problems, mood swings, short-term memory loss, chronic fatigue, rashes, aching joints, headaches, abdominal pain, sensitivity to bright light, blurred vision, and diarrhea.

Recent research indicates a significant number of Gulf War veterans are diagnosed with ALS, or Lou Gehrig's disease. Many more are reporting diagnoses ranging from neurological disorders to immune system problems. The NGWRC continues to press for additional research in these areas.

Other veterans report Chronic Fatigue and Immune Dysfunction Syndrome (CFIDS, a disease recognized by the VA) and Multiple Chemical Sensitivity (MCS, which is not recognized by the VA).

Recent research shows some Gulf War veterans may be more genetically susceptible to medical problems resulting from exposure to single, multiple, or chronic levels of toxins.

Where and How to Get Help

Medical Treatment

The NGWRC is not a medical research organization and cannot make specific recommendations regarding treatments. However, medical researchers and practitioners have had some success in treatment of those ill with Gulf War related illnesses.

Specifically, several practitioners are reporting success with ongoing therapy with the antibiotics. Additionally, some individuals have reported success with various alternative medicines and therapies.

Currently, the VA and DoD are conducting two research treatment trials. One, based on a controversial theory that a microbial infection (mycoplasma) may be at the root of Gulf War veterans symptoms, is an 18-month study involving a trial of doxycyline or a placebo.

Participants are screened, and those accepted into the study are accepted based upon symptoms and active mycoplasma infections. Fifty percent of participants receive doxycycline for a 12-month period, followed by a 6-month observation period, while the remaining fifty percent receive a placebo.

The study is active at thirty VA Medical Centers across the country. For more information, contact the VA at (800) PGW-VETS.

A second research treatment trial involves exercise and behavior modification. Controversial, this study is primarily sponsored by the DoD and involves adaptive behavioral techniques to adapt to Gulf War illness symptoms. For more information, contact the DoD at (800) 749-8387 or the VA at (800) PGW-VETS.

Medical Care and Disability Benefits

Ill Gulf War veterans are entitled to healthcare for war-related medical problems. Disability compensation and pension are VA entitlements that make up for your loss of income when you become disabled.

The VA healthcare system is divided into seven different levels of eligibility called categories. For example, category one has greater priority than category seven. Gulf War veterans, due to laws passed by Congress, were raised from category seven to category six.

Eligibility for such care is scheduled to end in 2001 if Congress does not extend such eligibility. However, care will still be provided for conditions which have been determined to be service-connected—you must formally file a claim to ensure that a condition is deemed service-connected.

See your veterans representative for more details on filing a claim. Scheduling of appointments, availability of treatment, payment of co-payments and other elements of VA health care are all based on the priority system.

The VA is divided into two main sections, the Veterans Health Administration (VHA) and the Veterans Benefits Administration (VBA). The VHA oversees the hospitals, and the VBA reviews or "adjudicates" claims made by veterans against the VA.

In most cases, the VBA must determine eligibility and category before the VHA provides medical care. Once the VBA approves your claim and grants you service-connection, then there may be many additional non-medical benefits available to you. If granted service-connection, please consult a veterans representative for further details.

VA health care is divided into service delivery "networks." The network system is called "VISN" (pronounced "vision"), which stands for Veterans Integrated Service Network, and includes 22 such networks. Examples of these are VISN-6, The Mid-Atlantic Network (NC, VA, and WV), and VISN-12, the Great Lakes Health Care System (WI and parts of IL, IN, MI).

A VISN includes several different types of VA facilities, including VA Medical Centers (VAMC's, formerly known as VA "hospitals"), VA Community-

Based Outpatient Clinics (CBOC's), and Vet Centers for readjustment counseling. In order to ensure efficiency, VA sometimes consolidates certain types of specialized health care at only one or a few facilities within the VISN. Thus, for certain specialized care, you may be sent to another VA facility within your VISN.

You may choose which facility to designate as your primary facility, but you may seek care at any other VA facility provided you are properly enrolled. This is especially important if you are traveling or temporarily staying in another area. Be sure to have your VA health care card with you at all times.

To enroll in VA health care, you must contact the VA at (800) 827-1000, or contact your local VAMC's Eligibility Office. You will be mailed or provided several forms to complete, and given further instructions on how to gain enrollment.

In addition to basic personal information, you must provide proof of eligibility (such as your DD-214) and income information. Should you encounter difficulties in enrolling in VA health care, contact your veterans representative or your Representative's or Senator's office.

Resolving Complaints and Problems

If you experience difficulties at your VA facility, such as not being able to get an appointment quickly enough, or having had a poor experience with a particular clinic, doctor, nurse, or staff, you should contact the Patient Representative at your VA Medical Center (VAMC).

If your primary VA facility is an outpatient clinic (CBOC), contact the Patient Representative at the clinic's parent VAMC. The Patient Representative is an individual or office of individuals that work to resolve patient complaints and problems. You can find the patient representative by speaking to the operator at your VA facility's main telephone number.

Prescriptions.

The VA pharmacy maintains several thousand approved prescriptions in stock at any given time. This approved "list" is called the VA formulary. Depending upon your level of eligibility (See Priority Level Eligibility, above), you may be charged co-payment for your prescriptions.

Generally, a co-payment is charged only for prescriptions for a non-service connected condition (a condition for which you are not currently receiving service-connected disability compensation or which has not been formally rated service-connected by the VA).

For most Priority levels, the co-payment is only $2.00, though this is subject to change at any time. If you are required to pay a co-payment, you will be mailed a bill that you must pay. If you cannot pay due to financial inability, be sure to immediately contact your VA Patient Representative to work out an arrangement.

Sometimes, your doctor may prescribe a prescription that is not in VA's approved formulary. In such cases, the VA pharmacist will generally contact your physician to make alternate arrangements.

Note that VA will only pay for prescriptions filled at a VA pharmacy—you cannot have your pharmacy filled at a private pharmacy if you wish for the VA to cover its cost.

For refills, you should generally use the automated touch-tone by phone system for refills. This system is simple to use, and you will receive your refills right at home in your mailbox.

Refills may come from a central facility within your VISN, and may take 10 days to two weeks to be refilled, so be sure to order them in time. Your VA pharmacy should have information included with your prescription on how to obtain a refill. If you accidentally run out of your prescription without getting a refill through the automated system, you can return to the VA pharmacy for a refill.

However, this method of gaining refills is strongly discouraged and should be used only if absolutely necessary—you may have to wait for many hours for your refill, and this slows down the system for other veterans.

If you experience unusual problems with your VA pharmacy, contact the VA facility's Patient Representative, your veterans representative, or your Representative's or Senator's office.

Compensation and Pension

Service connected compensation is available for disabilities that were incurred during, or aggravated by, military service. Compensation is payable based on the degree to which you are disabled by the service-connected condition.

Effective December 1, 1998, the benefit rate for a 10% disability is $96; for a 100%, or total, disability, the rate is $1989. Veterans who are rated at 30% or greater for service-connected disabilities may receive additional compensation for dependants.

Non-service connected pension is available to veterans with very low income who served during wartime and are totally disabled. The disabilities do not have to be service-connected, and combat service is not required. Additional pension for dependants is also available. Benefit payments are also available to eligible survivors of deceased veterans. Please contact your veterans representative from a veterans service organization for further assistance.

Service Connected Claims

Service-connected compensation is available to veterans with physical or mental disabilities that were incurred during or aggravated by service.

Compensation payments are not income dependent; that is, your income and assets are not considered when determining compensation.

The disability does not have to be related to combat. It just has to be connected in some way to your time in the military. In general, you have to prove three things:

- You currently have a physical or mental condition;
- Something happened in service: for example, you contracted a disease that began in service; you suffered an injury in service; something happened to you that affected your health while in service; you were treated for a chronic condition shortly after service; or a condition you had before service worsened due to service.
- There is a link between your current disability and what occurred during service. This link or "nexus" must usually be supported by an experts' opinion, such as a doctor.

There are certain exceptions – for example, some illnesses are presumed related to military service if they manifest themselves within certain time periods.

Please check with an accredited veterans' representative for further details.

Veterans Representatives

The NGWRC recommends that you file your claim with the assistance of a veterans representative working with a veterans service organization (VSO), with a state or country veterans agency.

During the claims process, once the VA claims reviewer decides the claim, a determination letter describing the decision is then sent to the veteran and the veterans representative working for a VSO.

When you receive any correspondence or decision form the VA, contact your veterans representative immediately, because sometimes the VA fails to send the required copy to your veterans representative. If there are errors or other problems with the correspondence or decision, then you and your veterans representative may provide written comment to the VA, may resubmit additional evidence for consideration, or file an appeal.

In many cases, veterans representatives have offices within a VA regional office — but they are not VA employees, they are paid by the state or local government or by a VSO to be your advocate against the VA.

While certain veterans organizations have better reputations than others for claims assistance, the information in the *Guide* should only be used as a general reference.

Veterans representatives are individuals, and while a veterans organization may have a particular reputation for claims assistance, the individual veterans representative in your area may have a completely different reputation.

Therefore, you should ask around for recommendations on which VSO to use in your area, and feel free to change to another if you are dissatisfied.

Caution: There are many important deadlines when filing a claim or appealing a claim that is denied in whole or in part.

Therefore, contact a veterans representative promptly. This way your claim is filed quickly. Then you do not lose eligibility for many different types of VA benefits, especially healthcare.

For certain types of appeals, it is critical that you closely monitor your claim with the assistance of a veterans representative and file any needed paperwork on time so that you do not lose benefits or healthcare eligibility.

Often the VA has difficulty reviewing your claim, and you may experience unusual circumstances regarding your claim. This may include an unexplained delay of more than 6 months obtaining your military service records.

If you are unable to gain adequate resolution with the VA or through your veterans representative, you have the right to contact your U.S. Representative or U.S. Senator and request assistance. As with VSO's, each Congressional office is unique, and the level of response from legislators varies.

The NGWRC suggests writing your Senator or Representative with any specific requests for assistance.

Congressional Actions

Overview of two Congressional Reports

In 1998, two major Congressional reports were issued, and almost every major finding in the reports supported the claims made by veterans, including the main complaint that the VA and DoD failed to respond to the concerns of veterans for medical care and research in a timely and appropriate manner.

The Senate Veterans' Affairs Committee released report 105-39 as a result of an investigation by their Special Investigation Unit under the direction of Senators Arlen Specter and John Rockefeller. The House Government Reform Committee released report 105-388 as a result of the work by Representatives Christopher Shays, Bernard Sanders, and others.

New Laws Specific to Gulf War Veterans

There are several laws pertaining to Gulf War veterans. These laws may be reviewed on the Internet at the web site maintained by the Library of Congress at http://thomas.loc.gov.

1. PL 102-1, the "Authorization for the Use of Military Force Against Iraq," enacted on January 14, 1991. This allowed for the start of the Gulf War (or Desert Storm) on January 17, 1991.
2. In April 1991, PL 102-25 retroactively set the start date of the Gulf War as August 2, 1990. The Gulf War continues well into its ninth year, with the U.S. bombing Iraq as recently as September 1999. The law granted eligibility for Gulf War veterans to obtain free counseling and readjustment services at VA Vet Centers
3. PL 102-190 required the DoD to establish a registry of those exposed to oil well fire pollution.
4. PL 102-585 established the VA's Persian Gulf Registry, where veterans can request a free health exam. The Registry is not a research program. The NGWRC strongly encourages veterans to enroll on the VA Registry by calling (800) PGW-VETS.
5. PL 103-139 granted $1.9 million in funding to the DoD to research Gulf War illnesses, including depleted uranium, to establish a medical research center at the University of Texas Health Sciences Center, and for an anti-bacterial study (Dr. Edward Hyman).
6. PL 103-160, passed in 1993, established VA specialized treatment centers. These remain open, and veterans with undiagnosed or difficult to treat medical conditions should consider requesting a referral to one of these centers from your VA healthcare provider or from your veterans representative. The NGWRC supports the concept of treatment centers, yet with expanded emphasis on toxic exposures.
7. PL 103-210, passed in 1993, requires the VA to provide healthcare on a priority basis to Gulf War veterans. This elevated Gulf War veterans from category 7 to category 6 at the VA.
8. PL 103-333 granted $2.35 million to the Centers for Disease Control and Prevention (CDC) to study Gulf War illnesses compared to a Gulf War-era control group.
9. PL 105-335 granted $5 million to the VA and DoD for research, including $3.4 million for Dr. Hyman.
10. PL 105-337 granted $20 million to the DoD for epidemiological studies, long-term effects of PB pills, and clinical research into the causes and treatment of Gulf War illnesses.
11. PL 103-446, the "Veterans Benefits Improvement Act of 1994," "provides compensation [and thus healthcare] to Persian Gulf War veterans who suffer disabilities resulting from illnesses that cannot now be diagnosed or defined, and for which other causes cannot be identified." The law also requires the VA to conduct outreach regarding research as well as treatment, and compensation benefits. The law also established a program to evaluate the health status of Gulf War veterans' spouses and children (but it does not provide healthcare or compensation to spouses of children). Finally, under PL 103-446, Congress found that "During the Persian Gulf War, members of the Armed Forces were exposed to numerous potentially toxic substances, including fumes and smoke from military operations, oil well fires, diesel exhaust, paints, pesticides, depleted uranium, infectious agents, investigational drugs and vaccines, and indigenous diseases, and were also given multiple immunizations."
12. PL 104-61 provided $3.4 million to the DoD for Dr. Hyman.
13. PL 104-201 provided $10 million for non-federal research into chemical warfare agent exposures, Gulf War vaccines, and investigational new drugs, such as PB. Also required a DoD review of PB pill and BT vaccine.
14. PL 104-208 provided $3.4 million to the DoD for Dr. Hyman.

15. PL 105-56 approved $4.5 million to the DoD for clinical trials for and health monitoring of Gulf War veterans.
16. PL 105-65 appropriated $12.5 million for research to the VA.
17. PL 105-85 required medical tracking for those deployed overseas, prior notification of soldiers before INDs (such as the PB pill or the BT vaccine) are used.
18. PL 105-277, the "Persian Gulf War Veterans Act of 1998," enacted in October 1998, is based on the "Agent Orange Act of 1991." The Gulf War law, first introduced by Rep. Christopher Shays (R-CT), and then guaranteed passage by Senator Robert Byrd (D-WV), establishes a system where medical conditions found by scientists to be associated with more than 30 toxins present in the Gulf War will be presumed as service-connected, thus making Gulf War veterans eligible for healthcare and compensation.Although the law requires a 10-year contract, the VA signed a 5-year contract with the National Academy of Sciences (NAS) in 1998 to review published medical research regarding toxic exposures in the Gulf War, and to recommend new research, if needed. The NAS expects to issue their report in the summer of 2000. The NGWRC has presented dozens of medical research papers regarding toxic exposures in the Gulf War, and is cooperating to the fullest extent possible with the NAS. The NGWRC has requested that the contract conform to the law and be extended until 2008 (the full 10 years). The NGWRC also supports the concept that more than one NAS committee investigate the more than 30 toxins listed in the law. Currently, the NAS is only investigating five toxins.
19. PL 105-368, the "Veterans Programs Enhancement Act" of 1998, enacted in November 1998, extends priority care for Gulf War veterans until December 31, 2001 (a continuation of PL 103-210). It also requires the VA to continue to evaluate the health status of Gulf War veterans' families until December 31, 1999 (a continuation of PL 103-446). The new law also establishes a public panel, to include Gulf War veterans and Gulf War veterans' organizations, that will provide oversight of on-going government efforts investigating Gulf War illnesses. PL 105-368 also calls for new research – this section is considered to be covered by the research required under PL 105-277.

In 1998, Congress extended the presumptive period for undiagnosed illnesses from two years to ten years, until December 31, 2001.

PL 105-277 and the NAS

The list of toxins to be studied by the National Academy of Sciences over the next ten years under PL 105-277 include the following:

A. Organophosphorous pesticides, such as chlorpyrifos, diazinon, dichlorvos, and malathion.
B. Carbamate pesticides, such as proxpur, carbaryl, and methomyl.
C. The carbamate pyridostigmine bromide (PB) used as a nerve agent prophylaxis.
D. Chlorinated hydrocarbon and other pesticide repellents, such as lindane, pyrethrins, permethrins, rodenticides (bait), repellent (DEET).
E. Low-level nerve agents and precursor compounds at exposure levels below those which produce immediately apparent incapacitating symptoms, such as sarin and tabun.
F. Synthetic chemical compounds, such as mustard agents (at levels below those which cause immediate blistering), volatile organic compounds, hydrazine, red fuming nitric acid (rocket fuel), solvents, and uranium.
G. Ionizing radiation, such as depleted uranium, microwave radiation, and radiofrequency radiation.
H. Environmental particulates and pollutants, such as hydrogen sulfide, oil fire byproducts, diesel heater fumes, and sand micro-particles.
I. Diseases endemic to the region, including the following, leishmaniasis, sand fly fever, pathogenic escherechia coli, and shigellosis.
J. Time compressed administration of multiple live, 'attenuated', and toxoid vaccines.

Under PL 105-277, the NAS is only required to find a statistical association, and this is a provision favorable to Gulf War veterans, especially since so much information is missing regarding exposure doses and times.

The NAS may consider other toxins not listed above. Thus, if veterans are aware of any other additions to this list, please notify the National Academy of Sciences at:

Dr. Harold Sox, Chair
NAS/IOM Committee on Health Effects Associated with Exposures Experienced During the Persian Gulf War
2101 Constitution Avenue, NW
Washington, DC 20418
(202) 334-2039 phone
http://www.nas.edu
pghealth@nas.edu

PL 103-446 and Undiagnosed Illnesses Benefits

In November 1994, a new law was enacted providing healthcare and compensation to Gulf War veterans for illnesses that cannot be diagnosed.

Never before has Congress directed the VA to pay compensation benefits for illnesses that cannot be diagnosed or where a specific cause has not been identified.

This regulation is called "Compensation for Disabilities Occurring in Persian Gulf War Veterans," and it was passed as the "Veterans Benefits Improvements Act of 1994," Public Law 103-446.

This regulation applies only to illnesses that cannot be diagnosed. If your condition has been completely and adequately diagnosed, the rules explained below do not apply to you.

The new law permits the VA to pay compensation benefits for a disability caused by chronic illnesses or symptoms (that exist for at least six months) and that cannot be diagnosed (identified). Before the VA will grant you compensation benefits as a Gulf veteran with undiagnosed illnesses, you must:

- Show that you served in the Southwest Asia theater of operations during the Gulf War (August 2, 1990 to a date yet to be set by Congress); *Note: Gulf War veterans who served in Turkey and Israel are not eligible for these benefits, and the NGWRC is pressing Congress to correct this oversight.*
- Show you have a chronic, undiagnosed or not "clearly defined" illness;
- Show your undiagnosed illness can be documented by a doctor or by statements from friends or family members; and
- Show the signs and symptoms of your illness revealed themselves ("manifested") during your service in the Gulf War or;
- Show the signs and symptoms of your illness began on or before December 31, 2001
- Show the medical conditions were severe enough to warrant at least a 10% VA disability evaluation.

You need not have suffered from symptoms every day for six months; you may have suffered from symptoms that have come, gone, and then reappeared over a six-month period.

Your symptoms do not have to be objective - that is, you do not have to be able to see or touch the symptoms or signs for your illness to qualify. However, you must be able to document the symptoms.

Please consult your veterans' representative regarding any unusual symptoms. A checklist of these symptoms is included as part of this new *Guide*.

Important:

In 1998, Congress extended the presumptive period for undiagnosed illnesses from two years to ten years (until December 31, 2001). If you filed a claim and it was denied because your symptoms did not manifest within two years (the rule under the old law) see your veterans representative immediately to reopen your claim. You should also consider whether you may be able to submit new evidence.

If you served in Turkey or Israel, consider filing a claim, as the law may be changed to accurately reflect that military duty in these two nations is considered Gulf War service by the DoD (Army Regulation 600-8-22, Military Awards).

The NGWRC supports expanding the VA definition of Gulf War veteran to include those serving in Israel and Turkey. This is because the DoD defines them as Gulf War veterans and because many of the same toxic exposures were present in Israel and Turkey.

Department of Defense Programs

DoD Registry (800)796-9699

The Defense Department's Comprehensive Clinical Evaluation Program (CCEP) is very similar to the VA Registry. It includes questionnaires and medical examinations.

In June 1994, almost four years after the start of the Gulf War, the DOD established the CCEP to provide in-depth medical evaluations to active duty personnel who have experienced health problems since the Gulf War. Referrals for further testing and medical care should be made for medical conditions noted during the evaluation.

In March of 1995 the DOD established a specialized care center at Walter Reed Medical Center in Washington, DC to provide intensive psychological care after the CCEP examinations.

The three-week outpatient program attempts to improve the functional status of patients experiencing disabling symptoms involving pain and fatigue.

Post-Traumatic Stress Disorder (PTSD)

Many Gulf war vets have been diagnosed with PTSD or other psychological conditions. Post-traumatic stress disorder is experienced by veterans, disaster survivors, police, firefighters, and others dealing with stressful and/or life threatening situations. PTSD is not a form of weakness, mental instability, or something "in your head."

Research has indicated that a normal person when placed under the level of stress existing in war, may undergo serious psychological changes. Some studies have shown physical alterations in brain activity associated with wartime service.

It is important to seek help to deal with these issues, because they may have an effect on your health, and they may aggravate other medical problems, and lead to other serious problems if not treated promptly and properly.

There are many symptoms related to PTSD. Please consult a professional healthcare provider for a diagnosis. The following list of symptoms is provided to assist veterans in determining if they should seek help. If you are unsure, seek help any way.

Many veterans choose to seek help at VA Vet Centers located in the local community rather than at a large VA medical center.

A partial list of symptoms includes: sleep disorders, nightmares, insomnia, depression or deep sadness, anger / rage, alienation / emotional numbing (such as avoiding feelings), isolating yourself from others, guilt / survival guilt, anxiety, intrusive thoughts (such as those about the war), flashbacks, hypervigilance / hyperalertness, exaggerated startle reaction (such as jumpiness reacting to sudden noises or physical contact), difficulty concentrating, memory impairment, low self esteem, problems with authority, employment difficulties, relationship difficulties, and self-medication with drugs and alcohol.

Vet Centers

There are 194 VA-funded Vet Centers located throughout the United States. Originally created for the use of Vietnam veterans (with readjustment concerns or PTSD), by 1991 the Vet Centers were opened to all combat veterans, including Gulf War veterans (Public Law 102-25).

The VA recognizes PTSD as a service-related condition, and the VA will provide medical care, and in some cases provide compensation. The Vet Centers and certain specialized units in VA Medical Centers provide treatment. PTSD is treatable and its symptoms can be dramatically lessened. If you have questions about Vet Centers or seeking help for PTSD, consult your local phone book (under the blue government pages) for the nearest Vet Center near you. You may also contact a veterans organization near you if there is no listing in the phone book.

Many veterans choose to seek help at VA Vet Centers located in the local community rather than at a large VA medical center.

The NGWRC strongly endorses the community-based Vet Center concept.

Persian Gulf Family Support Program

From 1991 until October 1994, Gulf War veterans and family members were eligible for readjustment counseling at VA Medical Centers (hospitals) through the Persian Gulf Family Support Program (PGFSP).

The program's funding was eliminated by Congress in 1994. Some hospitals have continued the PGFSP, though with reduced funding. Check with your local VA Medical Center to see if they offer counseling programs.

You may want to ask your local VA Medical Center to offer such a program if one is needed in your area. Many Gulf War veteran support groups associated with the NGWRC began when Gulf War veterans and family members came in contact with each other through this highly successful program.

The NGWRC is pressing for full funding of the PGFSP.

Social Security Administration (800) 772-1213

Given the failure of the VA to provide assistance to many veterans with Gulf War illnesses (the claims of Gulf War veterans are denied at a 28% higher rate than non-deployed veterans of the same era), it is important to know that other federal programs are available that may provide healthcare and compensation.

The Social Security Administration offers both disability compensation and supplemental security income benefits. The amount is less than VA compensation levels and you must be unemployable (unable to work 40 hours per week) to qualify for benefits.

In some cases, veterans can receive both SSA and VA disability compensation. Some veterans who were denied VA benefits have been able to secure SSA benefits. SSA claims can take several years to process so, as with VA claims, begin the process as soon as possible.

Family members and civilians who have Gulf War illnesses, or birth defects related to the Gulf War, are not eligible for VA programs and thus need to explore other options. Unfortunately, there are not many other options beyond Social Security programs.

Please consult local veterans groups, local Vet Centers, and local health and welfare offices for further assistance if the VA or SSA turns you down.

Litigation Against Chemical Companies

In 1994, a Texas law firm filed a class action lawsuit against several corporations on the grounds that the corporations manufactured, sold, or shipped chemical and biological dual-use compounds that were released into the air during the Gulf War.

The veterans also claim some shipments violated U.S. export regulations. Gulf War veterans and family members claim damages for injures as a result of exposure to low levels of biological and nerve agents from Iraqi missile attacks and from fallout from Coalition bombing of Iraqi weapons facilities during the war.

One law firm is representing veterans and families on a contingent-fee basis, meaning all fees and expenses will come out of any awarded monetary damages. Therefore, the law firm assumes all financial risks for the lawsuit. Veterans do not have to pay to be part of this lawsuit. However, they also will get only a small fraction of any settlement. The law firm to contact regarding the lawsuit is:

Gary Pitts, Esq.
Pitts and Associates
8866 Gulf Freeway; Suite 117
Houston, TX 77017
(800) 269-6345
(713) 910-0594 fax

Frank Spagnoletti, Esq.
1600 Smith, Suite 4545
Houston, TX 77002
(713) 653-5600

Claims Against Seized Iraqi Assets

In August 1990, after Iraq invaded Kuwait, the U. S. government froze and then seized more than $1.3 billion in Iraqi assets in the U.S.

In order for the assets to be distributed, Congress must pass and the President must sign a law detailing a distribution plan. Until then, the assets remain under the control of the Foreign Claims Settlement Commission, part of the Treasury Department.

There is strong legal and historical precedent dating back to the 1700s for the distribution of seized assets to veterans from wartime enemies. Shortly after the Revolutionary War, land and assets seized from Royalists supporting England were handed over to U. S. soldiers.

In a similar precedent, the U.S. seized the assets of Japan and Germany during World War II. Since these nations violated international laws by mistreating U.S. prisoners of war, the seized assets were distributed to former U.S. prisoners of war.

During the Gulf War in 1990 and 1991, Iraq violated international law by manufacturing and then threatening to use weapons of mass destruction such as chemical and biological warfare agents. As a result of the threat, U.S. and Coalition troops were forced to destroy large stockpiles of Iraqi chemical weapons.

In some cases, low levels of chemical warfare agents drifted into U.S. military positions, exposing as many as 100,000 U.S. troops, according to the DoD, and as many as 124,000, according to the VA.

Gulf War veterans (or surviving family members) may still register a potential claim against Iraq with the Foreign Claims Settlement Commission.

In 1999, legislation was introduced by Rep. Lloyd Doggett (D-TX) establishing the right of Gulf War veterans to receive priority consideration for claims filed against the seized Iraqi assets. On June 21, 1999 his bill, HR 618 was added as an amendment to HR 2415 by a vote of 427 to zero. .

At the time this Guide was prepared, there was no final outcome on the bill in the Senate. The NGWRC has endorsed the legislation introduced by Rep. Doggett. For further information, contact:

Iraq Registration Program
Foreign Claims Settlement Commission
600 E Street, NW; Suite 6002
Washington, DC 20579
(202) 616-6985

Gary Pitts, Esq.
Pitts and Associates
8866 Gulf Freeway; Suite 117
Houston, TX 77017
(800) 269-6345

Mr. Pitts represents more than 2,000 Gulf War veterans who have registered claims. The NGWRC lists him as a contact only, as we are unable to endorse the work of any attorney. The NGWRC provides only referrals.

Other Important Resources

Association of Birth Defect Children
930 Woodstock Road, Suite 225
Orlando, FL 32803
(407) 245-7035
E-mail: abdc@birthdefects.org

The Association of Birth Defect Children is conducting a survey of children, with parents who served in the Persian Gulf, who were born with birth defects or acquired illnesses.

CFIDS Association of America
P.O. Box 220398
Charlotte, NC 28222
(800) 442-3437
Email: info@cfids.org
http://www.cfids.org/

The CFIDS Association provides information and physician referral for individuals who are concerned about CFIDS.

MCS Referral and Resources
2326 Pickwick Road
Baltimore, MD 21207
(410) 448-3319
Fax: (410) 448-3317
E-mail: adonnay@mcsrr.org
http://www.mcsrr.org

MCS Referral and Resources provides information and physician referral for individuals who are concerned about Multiple Chemical Sensitivities.

Military Toxics Project
P.O. Box 558
Lewiston, ME 04243
(207) 783-5091 voice
(207) 783-5096 fax
Email: miltoxpr@ime.net
http:www.miltoxproj.org

The Military Toxics Project has a Depleted Uranium Citizens' Network that provides information on DU contamination and exposures.

NGWRC Organizations

Recognizing that no one was going to help veterans or families unless we help ourselves, groups of Gulf War veterans, families and civilians continue to organize at the grassroots level all across America and in other countries involved in the Gulf War.

These groups, unlike the larger veterans organizations, either have issues pertaining to Gulf War veterans as their primary focus or are willing to go the extra mile for Gulf veterans and their families.

These organizations are a good source of information and many are continually pressuring state and federal officials to further investigate these issues.

Alaska Gulf War Syndrome Referrals
Voting Rep. L. A. McClure
23740 Sunny Glen Drive
Eagle River, AK 99577
(907) 696-8688 voice
(907) 696-8488 fax
mcclure@alaska.net

Association of Birth Defect Children
Voting Rep. Betty Mekdeci
930 Woodstock Road, Suite 225
Orlando, FL 32803
(407) 245-7035
abdc@birthdefects.org

Augusta Gulf War Veterans, Inc.
Voting Rep. Lee E. Miskimon
Post Office Box 9632
Augusta, GA 30916
(706) 592-0547 voice

California Association of
Persian Gulf Veterans
Voting Rep. Erika Lundholm
310 Elk Street
Sonora, CA 95370
(209) 588-8529
dogood@mlode.com

Citizen Soldier, Inc.
Voting Rep. Tod Ensign, Esq.
267 Fifth Ave., Suite 901
New York, NY 10016
(212) 679-2250 voice
(212) 679-2252 fax

Civilian Veterans of the Gulf War
Voting Rep. Karl B. Lane
1203 Saratoga Street
Euless, TX 76040
(817) 545-1775 voice & fax
KBLane@aol.com

Crisis in the Homeland
Voting Rep. Bruce Anderson
566 West County Road
700 North, Number 3
Orleans, IN 47452
(812) 865-2555 home
crisishomeland@hotmail.com

Desert Storm Justice Foundation
Voting Rep. Gina Whitcomb
13775 South Douglas
Guthrie, OK 73044
(405) 348-1722 voice
(405) 348-8547 fax
dsjf@telepath.com

Desert Storm Veterans of Florida
Voting Rep. Kevin Knight
Post Office Box 6081
Titusville, FL 32782
(407) 269-3453
kknight@ngwrc.org

Desert Storm Veterans of Nebraska
Voting Rep. Todd Boyd
6404 North 49th Avenue
Omaha, NE 68104
(402) 455-7650 voice
(402) 977-4381 fax
boydt@89RSC.net

Desert Storm Veterans
of North Carolina, Inc.
Voting Rep. Larry Perry
Post Office Box 662
Richfield, NC 28137
(704) 463-7958
LPerryseab@aol.com

Desert Storm Veterans
of the Rocky Mountains
Voting Rep. Denise Nichols
4050 Cody
Wheat Ridge, CO 80033
(303) 424-6235 voice
(303) 422-2962 fax call first
DSNurse@aol.com

Gulf Veterans Association
Voting Rep. Larry Cammock
MEA House, 4th Floor, Ellison Place
Newcastle Upon Tyne
United Kingdom NE1 8XS
011-44-191-230-2065 voice
011-44-191-260-2558 fax
larry@gva-newcastle.freeserve.co.uk

Gulf War Veterans for Truth & Justice
Voting Rep. William Simmons
27 Fox Run Lane
Columbia, SC 29210
(803) 799-7515

Gulf War Veterans of Arkansas
Voting Rep. Lydia Pace
11127 Gila Valley Drive
Little Rock, AR 72212
(501) 225-9437 voice
neemak@hotmail.com

Gulf War Veterans of Delaware
Voting Rep. Sonny Evers
25 Beech Avenue
Wilmington, DE 19805
(302) 992-0817 voice
Sonny68@aol.com

Gulf War Veterans of Georgia, Inc.
Voting Rep. Ron Murray
1450 Ebb Court
Marietta, GA 30066
(770) 926-6745 voice and fax
rmmemm@bellsouth.net

Gulf War Veterans of
Metropolitan Washington, DC
Voting Rep. Charles-Sheehan Miles
1224 M Street, NW
Washington, DC 20005
(202) 628-2700, ext. 162 voice
(202) 628-6997 fax
cmiles@ngwrc.org

Gulf War Veterans of New England
Voting Rep. Diane Gates-Dulka
8 Frances Lane
Windsor Locks, CT 06096
(860) 623-1456

Gulf War Veterans of Western
Pennsylvania, West Virginia,
and Northeastern Ohio
Voting Rep. Rev. Barry Walker
600 North Market Street
East Palestine, OH 44413
(330) 426-3203 voice
(330) 426-3299 fax

Gulf War Veterans of Wisconsin
Voting Rep. Anthony Hardie
33 University Square, Suite 252
Madison, WI 53715
(608) 250-9645 voice
ahardie@ngwrc.org

Gulf War Veterans of Southeast Texas
Voting Rep. Tom Hare
3815 Liprie, Apt. 2
Orange, TX 77630
(409) 886-5295 voice

GulfWatch, I.N.S.
Voting Rep. Jim Brown
1013 Forest Brook Drive
Gastonia, N.C. 28056
(704) 868-2907 voice
gulfwatch@gridusa.net

Idaho Desert Storm Foundation
Voting Rep. Debra Smith
3431 Fourth Street, D
Lewiston, ID 83501
(208) 796-0348 voice
(208) 798-0168 fax
dsmith@ngwrc.org

The Last Patrol
Voting Rep. Mike Woods
1622 Dolphin Drive
Saint Cloud, FL 34771
(407) 891-8936
MWoods5372@aol.com

The Military Justice Clinic, Inc.
Voting Rep. Dr. Melvin D. Horton
960 MLK Jr. Drive, SW,
Suite 200
Atlanta, GA 30314
(404) 525-0240 voice
(404) 505-9038 fax

National Veterans Services Fund, Inc.
Voting Rep. Phil Kraft
Post Office Box 2465
Darien, CT 06820
(203) 656-0003 voice
(203) 656-1957 fax
NatVetSvc@aol.com

New England Persian Gulf
Veterans of Vermont
Voting Rep. David Irish
2567 North Hartland Road
White River Junction, VT 05001
(800) 827-1061 voice
(802) 295-8093 fax
IndngrL1@aol.com

Northern California Association
of Persian Gulf Veterans
Voting Rep. Debbie Judd
4040 Farris Drive
Valley Springs, CA 95252
(209) 772-2312 voice and fax
cntrygal@goldrush.com

Northwest Veterans for Peace, Inc.
Voting Rep. Marvin Simmons
7931 SE Glencoe Road
Milwaukie, OR 97222-1035
(503) 777-8951 voice
NWVP@teleport.com

Persian Gulf Information Network, Inc.
Voting Rep. Paul Lyons
Post Office Box 10160
Clarksville, TN 37042
(931) 431-9793 voice
(931) 431-5222 fax

Persian Gulf Veterans, Inc.
Voting Rep. Beverly Place
212 Garfield Avenue
East Rochester, NY 14445
(716) 385-4097 voice

Persian Gulf Veterans of America
Voting Rep. Kathy Hughes
Post Office Box 33291
Fort Sill, OK 73903

Persian Gulf Veterans of Rhode Island, Inc.
Voting Rep. John Cianci
1066 Eddy Dowling Highway
North Smithfield, RI 02896
(401) 765-3679 voice
gulfri@aol.com

Persian Gulf War Veterans
Association of America
Voting Rep. Duane Mowrer
3833 Midvale Avenue
Oakland, CA 94602
(510) 482-4931 voice
(510) 530-6337 fax
PGWVA@aol.com

South Florida Desert Storm Veterans
Voting Rep. Keith Schafer
3956 NW 94th Way
Sunrise, FL 33351
(954) 746-5144

Staten Island Desert Storm Veterans
Voting Rep. Jamie Gonzalez
3351 Richmond Road
Staten Island, NY 10306
(718) 987-7151 voice
Jaime_J_Gonzalez@email.mobil.com

Swords to Plowshares, Inc.
Voting Rep. Keith Boylan
1063 Market Street
San Francisco, CA 94103
(415) 252-4788
(415) 252-4790 fax
Kboylan@ngwrc.org

Trauma After Care Trust
Voting Rep. Doug Morris
Buttsfields, The Farthings
Withington, Glos.
UNITED KINGDOM GL54 4DF
011-44-124-289-0306 voice
011-44-124-289-0496 fax
tact@tacthq.demon.co.uk

Unified Veterans of America
Voting Rep. Joe P. Poe, Jr.
197 Jonesboro Road
Dunn, NC 28334
(910) 892-9389 voice
(910) 892-1499 fax
Mpoe@aol.com

VietNow
Voting Rep. Richard Sanders
1835 Broadway
Rockford, IL 61104
(815) 227-5100 voice
(815) 227-5127 fax
vnnatl@inwave.com

Veterans for Peace
Voting Rep. Sanford Kelson
733 15th Street, NW
Suite 928
Washington, DC 20005
(202) 347-6780 voice
(202) 347-6781 fax
vfp@igc.org
www.veteransforpeace.org

Veterans of Foreign Wars Post 2681
Voting Rep. Dan Gardner
140 Powers Ferry Road
Marietta, GA 30067
(770) 977-2088
dgardner@ngwrc.org

Veterans of Foreign Wars Post 5888
Voting Rep. Steve Brooks
5351 Coast Road
Santa Cruz, CA 95060
(408) 429-8345

Veterans Speakers Alliance
Voting Rep. Paul Cox
Post Office Box 40430
San Francisco, CA 94140
(415) 255-7331 voice

West Virginia Gulf War
Veterans Association
Voting Rep. Greg Smith
718 Grand Central Avenue
Box 154
Vienna, WV 26105
(304) 295-6623 voice
Gmsmithwv@cs.com

NGWRC ASSOCIATE GROUPS

Alexander Hamilton Post 448
The American Legion
Contact William Benfield
Post Office Box 411077
San Francisco, CA 94141-1077
(415) 431-1413

Americans For Truth
Contact Stella Gresham
13247 Church Street
Kuckville, NY 14571
(716) 831-3358 voice
(716) 682-4556 fax
Stella-Gresham@mc.xerox.com

The CFIDS Association of America
Contact Vicki Carpman Walker
Post Office Box 220398
Charlotte, NC 28222-0398
(800) 442-3437
cfids@cfids.org

Chemical Weapons Working Group
Contact Craig Williams
Post Office Box 467
Berea, KY 40403
(606) 986-7565 voice
(606) 986-2695 fax
kefwilli@acs.eku.edu

Education for Peace In Iraq Center
Contact Erik Gustafson
747 Tenth Street
Suite 2
Washington, DC 20003
(202) 543-6176 voice
epic@igc.org

Georgia Vietnam Veterans Alliance
Contact Marvin Myers
5879 New Peachtree Road
Doraville, GA 30340
(770) 452-8387 voice
(770) 936-0133 fax

Gulf War Research Foundation
Contact Jim Tuite
Post Office Box 25732
Washington, DC 20007
(703) 914-4863 voice
(703) 914-2074 fax
gretna@ix.netcom.com

Military Toxics Project
Contact Cathy Lemar
P.O. Box 558
Lewiston, ME 04243
(207) 783-5091 voice
(207) 783-5096 fax
miltoxpr@ime.net

National Organization of
Veterans Advocates
Contact Glenda S. Herl
P.O. Box 2099
Topeka, KS 66601
(800) 810-8387 voice
(785)357-4902 fax
carpgh@cjnetworks.com

National Veterans Legal
Services Program, Inc.
Contact David Addlestone, Esq.
2001 S Street, NW, Suite 610
Washington, DC 20009
(202) 265-8305 voice
(202) 328-0063 fax
nvlsp@nvlsp.org

New York State
POW/MIA Action Group
Contact Sean P. McGuirl
30 Ballantyne Brae
Utica, NY 14445
(315)733-1202 voice

North Shore Veterans
Counseling Services, Inc.
Contact Michael King
3rd & Broadway, 4th Floor
Beverly, MA 09915
(978) 921-4851 voice
(978) 921-8413 fax
vhammack@email.com

Tres Pueblos Auxiliary Veterans
of Foreign Wars Post 7263
Contact Geraldyne Marsh
2259 7th Avenue
Santa Cruz, CA 94062
(408) 475-9804

1st Chicago VietNow
Contact Brian McGhee
2326 North 72nd Court
Elmwood Park, IL 60707
(708) 861-3629 voice
(773) 235-8060 voice

Veterans Service Organizations (VSOs)

Free assistance with filing VA claims as well as free representation before a VA regional office, the Board of Veterans' Appeals, or the Court of Appeals for Veterans Claims (formerly the Court of Veterans Appeals) may be available through a veterans representative working for a veterans service organization (VSO).

These organizations generally have local veterans representatives in VA regional offices and hospitals. Contact a VSO at the nearest VA office or hospital, locate a service organization in your local phone book. Or, you may contact one of the organizations listed below at their national headquarters:

American Legion
700 North Pennsylvania Street
P.O. Box 1055
Indianapolis, IN 46206
(317) 630-1200
(317) 630-1223 fax
http://www.legion.org

AMVETS
4647 Forbes Boulevard
Lanham, MD 20706
(301) 459-9600
(301) 459-7924 fax
http://www.amvets.org

Catholic War Veterans
441 North Lee Street
Alexandria, VA 22314
(703) 549-3622
(703) 684-5196 fax

Disabled American Veterans (DAV)
807 Maine Avenue, SW
Washington, DC 20024
(202) 554-3501
(202) 554-3581 fax
http://www.dav.org

Jewish War Veterans
1811 R Street, NW
Washington, DC 20009
(202) 265-6280
(202) 234-5662 fax

Military Order of the Purple Heart
5413-B Backlick Road
Springfield, VA 22151
(703) 642-5360
(703) 642-2054 fax
http://www.purpleheart.org

Non Commissioned Officers Association
225 North Washington Street
Alexandria, VA 22314
(703) 549-0311
(703) 549-0245 fax
http://ncoausa.org

Paralyzed Veterans of American
801 - 18th Street NW
Washington, DC 20006
(202) 872-1300
(202) 416-7643 fax
http://www.pva.org

Veterans of Foreign Wars
406 West 34th Street
Kansas City, MO 64111
(800) VFW-1899
(202) 547-3196 fax
http://www.vfw.org

Vietnam Veterans of America
1224 M Street NW
Washington, DC 20005
(800) 882-1316
(202) 628-6997 fax
http://www.vva.org

Electronic and Internet Resources

National Gulf War Resource Center, Inc.
http://www.ngwrc.org
E-Mail: hq@ngwrc.org

Information on NGWRC programs and information sources available. The Resource Center's web site includes a searchable database of veterans' organizations across the country as well as thousands archived documents.

The *Guide* is available 24 hours each day, and may be downloaded for free.

Gulf War Veterans Mailing List

To subscribe to the list send mail to Majordomo@structured.net with the message body reading "subscribe GWVM." This is the primary Gulf War related e-mail list and has been in continuous operation since April 1994.

Gulf War Veterans Resource Pages
http://www.gulfweb.org

The original award-winning home page on the World Wide Web dedicated to Gulf War Veterans and veterans issues.

DoD GulfLink
http://www.gulflink.osd.mil

This is the DoDs presence on the internet, with extensive declassified documents relating to toxic and/or chemical exposures in the Gulf.

Social Security Administration
http://www.ssa.gov

Department of Veterans Affairs
http://www.va.gov/health/environ/persgulf.htm

State and County Agencies

Each state has a separate department of veterans affairs. Many cities and counties may have a veterans' service office providing representation and assistance to veterans and their families at no charge.

Look in the government section (usually the blue pages) of your local telephone directory for state, county and city veterans services. Often your state will have special programs not available elsewhere, such as California's CalVet low interest home loans. Many other states have a one-time bonus for Gulf War veterans who served in the theater between 1990 and 1991. Call the NGWRC for further details.

Legal Aid and Legal Services Offices

Free representation by lawyers or paralegals at legal aid or legal services offices in your county may be available if your family is considered low income. Even when they can not represent you directly, many have access to resources and *Guides* that you may find helpful and they may let you use them.

Private Attorneys

Government regulations do not allow veterans to hire a lawyer (at market rate) to represent them during most stages of the VA claims process. You may pay a private lawyer to represent you regarding a VA claim, but only under certain specific restrictions.

You must have filed a "notice of disagreement" with a VA regional office on or after Nov. 18, 1988 and the Board of Veterans' Appeals must have subsequently issued a decision denying your appeal.

You can then pay a lawyer to reopen your claim at the VA regional office or appeal the BVA decision to the Court of Appeals for Veterans Claims.

You must hire the lawyer within one year of the BVA decision. However, if you wish to appeal to the Court of Appeals for Veterans Claims, you must do so within 120 days of the date of the Board decision, whether you have retained an attorney or not.

Note: Because there are critical cut-off dates regarding the filing of many VA forms, please consult your veterans representative or your attorney immediately upon receipt of any regional office or Board decision. The regulations regarding an attorney do not apply if the attorney is willing to represent you for free or if someone who does not have an interest in the claim pays the lawyer.

In contrast, if you receive a denial from the Social Security Administration, you are free to retain a lawyer. Obtaining legal advice may be prudent, as an attorney may help with the very complex appeal process.

They may represent you for a portion of the retroactive award, or, if you are low income, you may find a pro-bono lawyer or a local legal assistance society.

GI Rights Hotline
1830 Connecticut Avenue, NW
Washington, DC 20009
(800) 394-9544 – discharged veterans only
(877) 378-2146 – active duty service only

A free, confidential, non-governmental, nationwide hotline for information about discharges, discrimination, and legal referrals.

National Veterans Legal Services Program
2001 S Street NW, Suite 610
Washington, DC 20009
(202) 265-8305
(202) 328-0063 fax
E-mail: nvlsp@nvlsp.org
http:www.nvlsp.org

NVLSP publishes a wide variety of *Guides* of assistance to veterans. NVLSP is a non-profit law firm.

National Organization of Veterans' Advocates
P.O. Box 2099
Topeka, KS 66601
(800) 810-8387
(785) 357-4902 fax
E-mail: carpgh@cjnetworks.com
http://www.veteransadvocates.com

NOVA provides referrals to lawyers specializing in veterans' issues.

Veterans Due Process, Inc.
P.O. Box 68237
Portland, OR 97268
(503) 659-9912

Veterans Due Process is a private organization that advocates on veterans' legal issues.

About the *Self-Help Guide* and the NGWRC

Other Self Help Guides

Previous veterans self-help guides prepared by the National Veterans Legal Services Program, Swords to Plowshares, and the Vietnam Veterans of America were invaluable resources for the preparation of this *Guide*.

We extend our thanks to these organizations for all the energy, enthusiasm, and knowledge they have contributed towards the field of veterans' self-help *Guides*.

Please contact these organizations, or the Disabled American Veterans, Veterans of Foreign Wars, and The American Legion for other general information about VA healthcare and VA compensation.

Final Note

The contents of this *Guide* are for informational purposes only. Neither the National Gulf War Resource Center, Inc. nor its principals assume responsibility for the accuracy of the information contained herein.

This *Guide* is distributed free to Gulf War veterans, service providers, and others interested in helping those who are ill. Please feel free to copy and distribute this *Guide*. We request only that proper credit be given. Any other use requires the written pre-authorization of the National Gulf War Resource Center, Inc.

The Authors: The *Guide* is written by and for Gulf War veterans and our families. The *Guide* is a volunteer effort with assistance from several subject matter expert reviewers. The primary authors are Charles Sheehan-Miles and Paul Sullivan, both Gulf War veterans with extensive experience working as veterans' advocates in Washington, DC.

The following individuals contributed or assisted with editing or reviewing the 3rd Edition or a prior edition of the self-help *Guide*: Chris Komkven, Erika Lundholm, Debra Smith, Debbie Judd, Dan Fahey, Anthony Hardie, Dan Gardner, Elinor Roberts, Len Selfon, plus the Board and member groups of the National Gulf War Resource Center, Inc.

If you find this guide useful, please consider making a tax-deductible contribution to the NGWRC so may print additional copies and distribute them for free to Gulf War veterans in need. Thank you.

NGWRC 1998-1999 Board of Directors
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CHECKLIST OF GULF WAR ILLNESSES SYMPTOMS
THIS LIST *DOES NOT INCLUDE* ALL SYMPTOMS

Symptoms may vary from individual to individual depending upon genetic make-up, immune system, and THE duration and type(s) of toxic exposures. The following list of symptoms has been compiled from documented symptoms listed by Gulf War veterans.

This list is grouped by diagnostic codes according to the requirements of the "Persian Gulf Veterans Act," Public Law 103-446, which provides compensation for undiagnosed or not "clearly defined" illnesses. Please inform your health care provider or your veterans representative with information about any other unusual symptoms not listed here.

IMPORTANT:

PLEASE COPY THIS FORM BEFORE FILLING IT OUT. THIS WAY OTHER ILL VETERANS CAN COPY THE ORIGINAL ON THIS PAGE, COMPLETE IT, AND GIVE IT TO THEIR HEALTHCARE PROVIDER AND VETERANS REPRESENTATIVE.

AFTER COMPLETING THIS FORM, PLEASE KEEP A SEPARATE COPY FOR YOUR RECORDS. YOU SHOULD KEEP COPIES OF ALL MEDICAL RECORDS AND VA CORRESPONDENCE.

PLEASE PROVIDE COPIES TO YOUR HEALTH CARE PROVIDERS AND YOUR VETERANS REPRESENTATIVE ASSISTING YOU WITH YOUR VA DISABILITY CLAIM.

NOSE AND THROAT:
DIAGNOSTIC CODE: 8865

__Sneezing or the urge to
__Itching, Rubbing
__Obstruction
__Post-nasal drip
__Sinus Discomfort
Frontal Face Pain
__Stuffy feeling
__Loss of smell
__ Acute sensor of smell
__Frequent nose bleeds
__Severe reactions to **smells, odors, fumes** (Multiple Chemical Sensitivity)
__Itching Throat
__Sore, tight, swollen throat
__Dysphagia (Difficulty in swallowing)
__Choking
__Weak voice
__Hoarse voice
__Excess salivation/mucous
__Metallic taste in mouth
__Dry, burning throat
__Bitter or sweet slime in mouth
__White coating on tongue
__Sores in, on, around mouth

EARS AND OTHER SENSE ORGANS: DC 8862

__Itching
__Full or blocked
__Erythema (redness of ears)
__Tinnitus, (ringing in ears)
__Ear ache
__Hearing loss
__Hyperacusis (abnormal sensitivity to sound)
__Discharge

LUNGS AND PLEURA:
DC 8868

__Wheezing
__Coughing
__Sneezing
__Reduced airflow
__Shortness of breath
__Heavy, tight, not enough air
__Hyperventilation (rapid breathing)
__Chest pain
__Chest burning, tightness, soreness
__Swelling of heart and lungs
__Abnormal chest x-ray
__Acneform (lesions)
__Asthma
__Productive Cough

HEART DISEASES:
DC 8870

__Chest pain with exertion
__Shortness of breath
__Heavy, tight, not enough air
__Chest pain
__Neck pain
__Left and or right arm pain
__Chest burning, tightness, soreness
__Tachycardia (rapid pulse)
__Palpitations (rapid irregular or throbbing pulse. Extra or skipped heart beats)
__Bruise easier than normal
__Spontaneous bruising
__Petechiae (blood under the skin)
__Cold sensitivity
__Heat sensitivity
__Fluid in Lungs; Congestive Heart Failure
__Swelling of heart and lungs
__High blood pressure
__Low blood pressure
__Abnormal EKG
__Enlarged heart
__Carotid pain

MUSCULOSKELETAL:
DC 8850 / 8852

__Muscle fatigue with exertion
__Muscle burning
__Muscle ache/pain
__Joint ache/pain
__Stiff joints
__Swelling of joints
__Erythema, warmth, redness
__Arthritis like symptoms
__Lumps under the skin at joint areas
__Tight, stiff muscles
__Pain, soreness, or aching of:
__Neck
__Upper Back
__Lower Back
__Extremities
__Swelling of hands or feet
__Cramps
__Muscle twitching
__Generalized muscle weakness

SKIN: DC 8878

__Burning skin
__Lumps under skin
__Itching, local or general
__Scratching
__Moist sweating
__**Night sweats**
__Flushed, hives
__Eczema
__Inability to sweat
__Pallor (white or ghostly)
__Discolored nails
__Rashes with or without discharge
__Sunburned appearance
__Acne
__Hair loss
__Premature graying of hair
__Ridges / splitting of fingernails
__Blistering

DISEASE OF THE EYE:
DC 8860

__Itching, burning pain
__Lacrimation (tearing)
__Dark circles under eyes
__Sensitive shiners
__Feel heavy
__Swollen eyelids
__Milky discharge
__**Pain / Pressure behind eyeball**
__Twitching of the eye
__Blurring
__Acuity decrease
__Spots, flashes (floaters)
__Darker vision loss
__Photosensitive
__Difficulty with night vision
__Diplopia (double vision
__Dyslexia
__Temporary areas of blindness

GENITOURINARY:
DC 8875

__Persistent mild urge to void (urinate)
__Frequency in voiding
__Urgency, pressure
__Dribbling
__Dysuria (painful or difficult urination)
__Genital itch
__Blood in urine
__Kidney problems
__**Lower back, flank-pain**
__Loss of bladder control
__Retaining fluid
__Impotence
__Burning semen
__Kidney stones

GYNECOLOGICAL:
DC 8876

__Excessive bleeding
__Genital itching
__Vaginal discharge
__Yeast infections
__PMS
__Menstrual problems
__Hot flashes (under 40 years old)
__Painful intercourse
__Difficult / Abnormal pregnancy
__Abnormal childbirths
__Children born with birth defects
__Miscarriages
__Cysts, Tumors
__Burning semen

UPPER DIGESTIVE SYSTEM:
DC 8872

__Stomach pain
__Spleen pain
    __Dull
    __Sharp
__Liver pain
    __Dull
    __Sharp
__Nausea
__Belching
__Full, bloated feeling
__Vomiting
__Ulcer
__Gall bladder symptoms
__Hunger, thirst
__Hyperacidity
__Food intolerance
__Reflux

LOWER DIGESTIVE SYSTEM:
DC 8873

__Full, bloated feeling
__**Pressure, pain, cramps**
__Flatus, rumbling, gas
__**BM Diarrhea**
__Blood in BM
__Constipation
__Ulcer
__Food Intolerance
__Loss of Bowel Control

ENDOCRINE SYSTEM:
DC 8879

__Change in Thyroid function
__Change in metabolism
__Weight gain / weight loss
__Temperature deregulation

HEMIC & LYMPHATIC:
DC 8877

__Anemia
__Bleeding disorders
__Swollen, painful lymph nodes
__Bruising
__Blood clots

SYSTEMIC DISEASES:
DC 8863

__Chronic Fatigue
__Abnormal Weight changes
__Change in susceptibility to infections
__Sudden & prolonged increase in body temperature (unexplained fever)
__Unexplained chills
__Severe body aches
__Flu-like symptoms
__MCS (Multiple Chemical Sensitivity)
__General achiness

MISCELLANEOUS NEUROLOGICAL:
DC 8881

__Chronic Fatigue (lasting more than 6 months)
__Exaggerated startle response
__Night sweats
__Headaches
  __Pain behind the eyes
  __Frontal headaches
  __Temporal headaches
__Migraines
__Throbbing, stabbing pain
__Fainting or dizziness
__Seizures
__Tremors
__Depression
__Mood swings
__Hallucinations
__Hyperactivity
__Irritability / flashes of rage
__Apathy
__Confusion
__Lethargy
__Black outs
__Insomnia
__Difficulty sleeping
__Somnolence (sleepiness)
__Forgetfulness
__Short term memory loss
__Drop in IQ
__Loss of logic sequencing ability
__Loss of coordination (dropping things, knocking over things you meant to pick up)
__Hard time waking up
__Loss of balance (feeling of falling forward, sideways, or backwards)
__Crawling sensation on skin
__Decreased attention span
__Change in reflexes
  __Increased
  __Decreased
__Generalized Weakness with or without pain
__Organic Brain Syndrome
__Muscle twitching
__Numbness
__Tingling
__Reflex hyperactivity
__Progressive limb weakness
__Facial / eye twitching
__**Facial numbness palsy**
__Difficulty walking
__Difficulty speaking (halting or slurred speech, forgetting the names of people, places or things)
__Anxiety attacks
__Poor concentration
__Agitation
__Feeling of pressure in head
__Atrophy of hands
__Spasticity
  __Hands
  __Legs

PSYCHOPHYSIOLOGIC:
DC 8895

__Suicidal thoughts
__Depression
__Delusions
__Tremors
__Mood swings
__Hallucinations
__Hyperactivity
__Irritability / flashes of rage
__Extreme fatigue
__Apathy
__Confusion
__Lethargy
__Difficulty sleeping
__Organic Brain Syndrome
__Agitation
__Paranoia
__Extreme startle reflex
__Frequent accidents

DENTAL AND ORAL:
DC 8899

__**Bleeding gums**
__Loose teeth
__**Excess tooth deterioration**
__**Abnormal tooth chipping**
__Sores in, or around mouth

National Gulf War Resource Center, Inc.
1224 M Street, NW
Washington, DC 20005
(800) 882-1316, ext. 162
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(202) 628-6997 fax
hq@ngwrc.org
http:///www.ngwrc.org

The NGWRC Needs Your Help!

Since 1995, the National Gulf War Resource Center has been working to help veterans and others with illnesses related to the Gulf War. To continue our mission and to print more *Guides* like this one, we need your help! Please make a donation to the NGWRC. The NGWRC is a tax-exempt charitable organization and your donations are tax-deductible.

Name: ______________________________

Address: ______________________________

Address: ______________________________

City:______________ State: _____ Zip: ____________

Telephone (optional): ______________________________

Would you like to receive information on our Year 2000 Annual Conference? ___Yes ___No

Donation Amount: ___ $250 ___ $ 100 ___ $50 ___ $25 _____ Other amount

NGWRC Membership Application

Yes! My organization would like to become a member organization of the National Gulf War Resource Center, Inc. Please send a complete membership packet!

Membership type: [ ] Full (voting) [ ] Associate [ ] Don't know

Organization Name: ______________________________

Address: ______________________________

City, State, Zip: ____________________ Country: __________

The primary purpose of the organization is: ______________________________

____

____

Name of Person Representing Group: ______________________________

Phone: ______________ E-mail: __________

____ Please send a membership packet today!

National Gulf War Resource Center, Inc.
1224 M Street, NW
Washington, DC 20005
(800) 882-1316 x 162
(202) 628-2700 x 162
(202) 628-6997 fax
hq@ngwrc.org
http://www.ngwrc.org

Quick Reference Guide

Veterans' Groups	**Phone Number**	**Internet Website**
NGWRC	(800) 882-1316, x162	http://www.ngwrc.org
VVA	(800) 882-1316	http://www.vva.org
VFW	(800) VFW-1899	http://www.vfw.org
American Legion	(317) 630-1200	http://www.legion.org
AMVETS	(301) 459-9600	http://www.amvets.org
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Library of Congress Laws, regulations, reports and pending bills		http://thomas.loc.gov

Congress—Toll-Free	(877) 778-9001 to Call your Representative or Senator
House:	(202) 225-3121
Senate:	(202) 224-3121

Special Thanks to the Vietnam Veterans Assistance Fund

The NGWRC thanks Gulf War veterans and NGWRC member groups for our united effort to press for the passage of the "Persian Gulf War Veterans Act of 1998." The NGWRC also thanks the Vietnam Veterans of America, the Veterans of Foreign Wars, the Disabled American Veterans, The American Legion, and AMVETS for supporting the new laws.

Special dedication to **Kelli Willard-West**, former Director of Government Relations at VVA; and **William Russo**, former Director of Benefits at VVA and former member of the NGWRC Board of Directors, for their invaluable advice and mentorship of the NGWRC from 1995 to 1999.

PROJECT BRIEFING

Health Effects of Depleted Uranium

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Acting Team Leader
Depleted Uranium Team

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Kimberly Benson, Ph.D.
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Armed Forces Radiobiology Research Institute (AFRRI)
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Health Effects of Embedded Depleted Uranium

BACKGROUND

- ***Gulf War involved first known combat use of munitions made with depleted uranium (DU); only Allied forces used DU; DU casualties resulted from friendly-fire incidents.***

- ***Standard surgical guidelines dictate metal fragments be left in place if risk of surgery is greater than potential damage fragments may cause later.***

- ***Are guidelines appropriate for a metal with the unique chemical and radiological properties of DU?***

- ***Given the demonstrated effectiveness of DU munitions, U.S. can expect adversaries will use such weapons in future conflicts, leading to greater numbers of Allied DU casualties.***

Health Effects of Embedded Depleted Uranium

AFRRI DU PROGRAM OBJECTIVE

Determine if short-term/long-term risks of embedded DU fragments warrant changes in fragment removal policies

Health Effects of Embedded Depleted Uranium

DU shrapnel in lower leg

Health Effects of Embedded Depleted Uranium

HISTORY OF AFRRI DU PROGRAM

- Request from Army Surgeon General for literature assessment of health risks from DU fragments (Feb 92)
- Provisional AFRRI recommendations (Mar 93)
    - No evidence for need to change fragment removal policy.
    - Suggested patient follow up and further research
- AFRRI pilot study for adequacy of rat model for studies of embedded DU (PM TMAS, Apr 94)
- AFRRI study of redistribution and toxicity of embedded DU fragments (USAMRMC, Jan 95-Jan 98)
- AFRRI study of DU effects on developing fetus (USAMRMC Women's Health Issues Program, Oct 96-Oct 99)

GENERAL EXPERIMENTAL APPROACH

- *Chemical toxicity and fetal effects studies using a rat model with embedded DU pellets; measure uranium distribution to critical organ systems in the male, female, and fetus*
- *Carcinogenicity studies using various endpoints*
- *Toxicity studies on nervous system and immune function*
- *Analyze risk and develop treatment strategies*

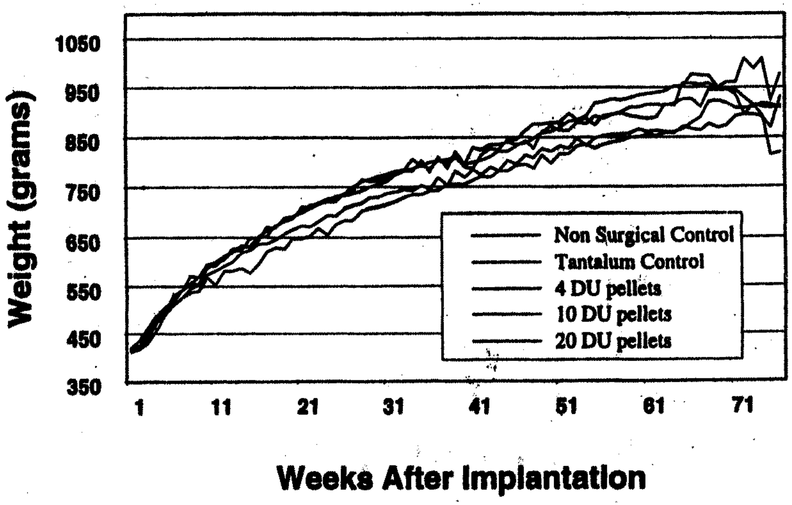
Health Effects of Embedded Depleted Uranium

DU Toxicity and Distribution Studies

Terry Pellmar, Ph.D.

- *Male Sprague-Dawley rat model*
- *Implanted in gastrocnemius muscle with 4, 10, or 20 pellets DU, tantalum (Ta), or combination.*
- *Measure uranium distribution over time to critical organ systems; kidney and bone histology; kidney, behavioral, and neurophysiological tests.*

Health Effects of Embedded Depleted Uranium

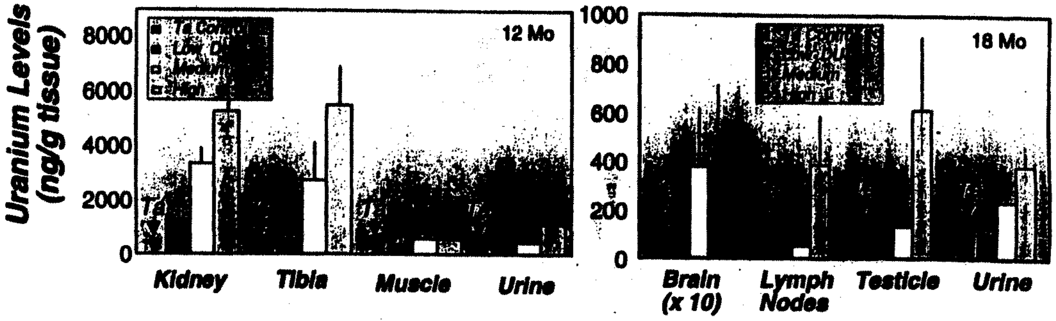


Rate of Body Weight Gain in DU-Implanted Animals

- *DU-Implanted Rats Gain Weight Slower than Ta-Implanted Controls*

Health Effects of Embedded Depleted Uranium

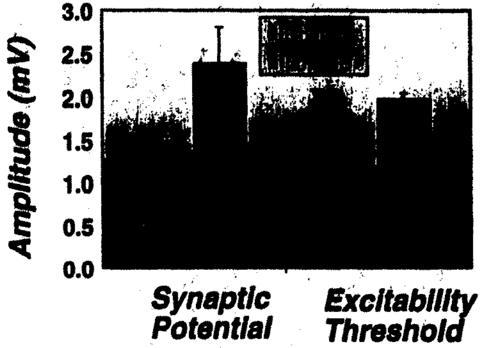
Uranium Distribution in Rat Tissue after DU Pellet Implantation



- ***Uranium redistributes with time to various organs and tissues, especially bone and kidney; also found in brain, lymph nodes, and testes***
- ***No apparent changes in tissue histology or kidney function***
- ***Research supported by peer-reviewed USAMRMC grant (1995-98)***

Health Effects of Embedded Depleted Uranium

Neurotoxicity 12 Months after DU Pellet Implantation



- *No behavioral effects observed in implanted animals; nerve conduction parameters altered in hippocampus but no evidence of pathology*
- *Further investigation of DU effect on nervous system is basis for new peer-reviewed USAMRMC research grant (Jan 99)*

Health Effects of Embedded Depleted Uranium

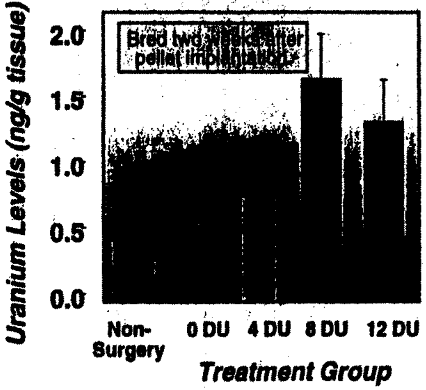
Effect of DU on Fetal Development

Kimberly Benson, Ph.D.

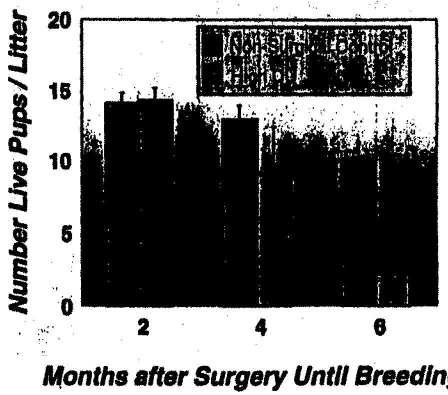
- *Female Sprague-Dawley rat model*
- *Implanted in gastrocnemius muscle with 4 to 32 pellets DU, tantalum (Ta), or combination.*
- *Animals made pregnant after implantation.*
- *Measure uranium distribution to kidney, placenta, fetus.*
- *Assess fetal developmental parameters.*

Health Effects of Embedded Depleted Uranium

Uranium Levels in Fetus



Litter Size Effects of Uranium



- *Uranium accumulates in the placenta and fetus of implanted pregnant rats*
- *Preliminary evidence of decreased litter size in DU-implanted animals*
- *Study supported by peer-reviewed USAMRMC research grant (1997-98)*

Health Effects of Embedded Depleted Uranium

Transformation, Mutagenicity, Carcinogenicity

Alexandra Miller, Ph.D.

Determine whether exposure to embedded DU presents a long-term risk of cancer.

Other heavy metals have been shown to be mutagenic and have the capacity to confer tumorigenic potential to exposed cells.

APPROACH

In Vitro: Use standard methodologies to assess both the mutagenic and tumorigenic potential of exposure to DU in cultured cells.

In Vivo: Assess oncogene expression in DU-implanted animals; assess genetic instability in lymphocytes from implanted animals.

Health Effects of Embedded Depleted Uranium

Comparison of Transformation Rate and Tumorigenicity of Militarily-Relevant Heavy Metals

DU Transforms Cultured Cells to Tumorigenic Phenotype

Normal and DU-Transformed HOS Cells

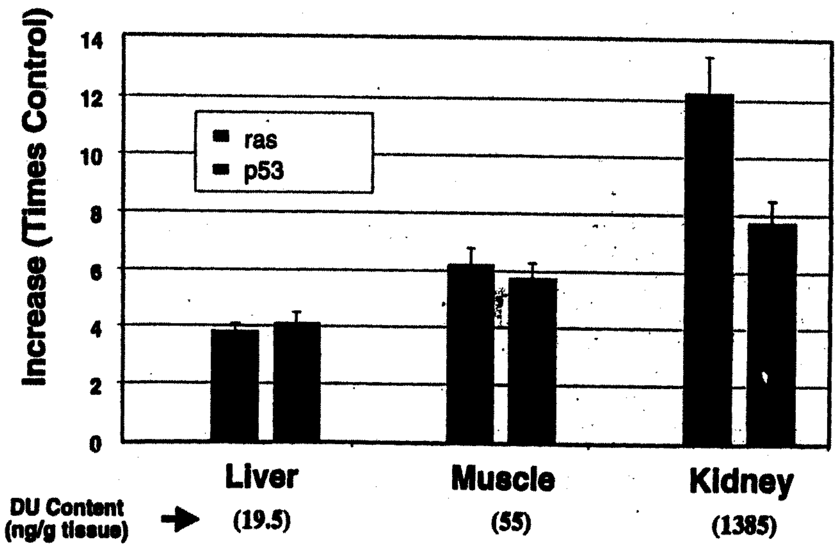
	Untreated	Tungsten	Tungsten/Nickel Cobalt	Nickel	Lead	Soluble DU	Insoluble DU	DU/Phenyl Acetate
Transformation Rate*	4.2	28.2	121.5	29.9	21.1	40.2	115.9	4.7
Tumorigenicity**	0/82	8/24	10/12	7/24	2/20	11/25	13/20	0/12

**** Number of transformed cells per 500,000 surviving cells***

***Number of tumors formed when 1 million transformed cells injected into immune compromised mice*

Health Effects of Embedded Depleted Uranium

DU Induces Oncogenes Known to be Involved in Carcinogenesis



Health Effects of Embedded Depleted Uranium

Carcinogenicity Data Summary

In Vitro Studies

- *DU transforms cells to a tumorigenic phenotype; cells form tumors in mice*
- *DU is mutagenic (Ames bacterial reversion tests)*
- *DU exposure induces genetic instability*
- *Suppression of transformation by phenylacetate*

In Vivo Studies

- *Time- and DU dose-dependent increase in oncogene expression in tissues from DU-implanted rodents*
- *Urine from DU-implanted animals is mutagenic*
- *Oncogene proteins detected in blood of DU-implanted animals*

Conclusion

- *Strong evidence exists to support detailed study of potential DU carcinogenicity*

Health Effects of Embedded Depleted Uranium

FUTURE DIRECTIONS

- *Initiate DU neurotoxicity project*
- *Initiate in vivo carcinogenicity study*
- *Complete fetal development project; begin project on male reproductive effects.*
- *Initiate tungsten toxicity assessment*
- *Initiate in vivo immunotoxicity assessment*

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Washington, DC 20005
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web: www.gulfweb.org/ngwrc, e-mail: ngwrc@vva.org

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Paul Sullivan

August 10, 1999

Frances Murphy, M.D., Director
Environmental Agents Service
Department of Veterans Affairs
810 Vermont Avenue, NW
Washington, DC 20420

Dear Dr. Murphy:

As we discussed a few weeks ago, the National Gulf War Resource Center believes that veterans who served in Israel and Turkey since the start of the Gulf War should be considered Gulf War "theater" veterans, and thus eligible for benefits under the Gulf War veterans' undiagnosed illnesses compensation law enacted in 1994.

The NGWRC believes that since soldiers in Israel were subjected to SCUD missile attacks, then they truly were in a war zone. In fact, based on the CENTCOM nuclear, biological, and chemical log released in 1995, there may have been a SCUD chemical attack on Israel. It is reasonable and appropriate to call them "theater" veterans.

The NGWRC believes that since Air Force personnel in Turkey provided significant strategic and tactical air support, they are also truly war veterans, just as those who loaded and serviced planes in England during 1941 - 1945 are World War II veterans.

Veterans in both Israel and Turkey, we understand, may have been exposed to PB pills, anthrax vaccines, pesticides, and other toxins that may result in undiagnosed illnesses. This issue remains under investigation by the National Academy of Sciences.

Many grassroots Gulf War support groups played an important role in the passage of the undiagnosed illnesses compensation law in 1994. Now that we are organized at the national level, it is appropriate that the law be corrected so that all those in the theater of war be considered eligible for benefits.

I have included a copy of the text of the law that omits Israel and Turkey. This issue is very simple to resolve by having the VA request legislation to correct it and make it retroactive. We are sending copies of this letter to the House and Senate Veterans' Affairs Committees in an effort to seek their support for the introduction of this much-needed legislation.

The NGWRC looks forward to your response on this matter.

Sincerely,

- COPY -

PAUL SULLIVAN
Executive Director

AR 600-8-22

25 February 1995

2.14 Southwest Asia Service Medal

a. The Southwest Asia Service Medal (SWASM) was established by Executive Order 12754, 12 March 1991. It is awarded to all members of the Armed Forces of the United States serving in Southwest Asia and contiguous waters or airspace thereover, on or after 2 August 1990 to a date to be determined. Southwest Asia and contiguous waters, as used herein, is defined as an area which includes the Persian Gulf, Red Sea, Gulf of Oman, Gulf of Aden, that portion of the Arabian Sea that lies north of 10 degrees N. latitude and west of 68 degrees E. longitude, as well as the total land areas of Iraq, Kuwait, Saudi Arabia, Oman, Bahrain, Qatar, and United Arab Emirates.

b. Members of the Armed Forces of the United States serving in Israel, Egypt, Turkey, Syria, and Jordan (including the airspace and territorial waters) between 17 January 1991 and 11 April 1991, will also be eligible for this award. Members serving in these countries must have been under the command and control of U.S. Central Command or directly supporting military operations in the combat theater.

c. To be eligible, a service member must meet one or more of the following criteria:

(1) Be attached to or regularly serving for one or more days with an organization participating in ground or shore (military) operations.

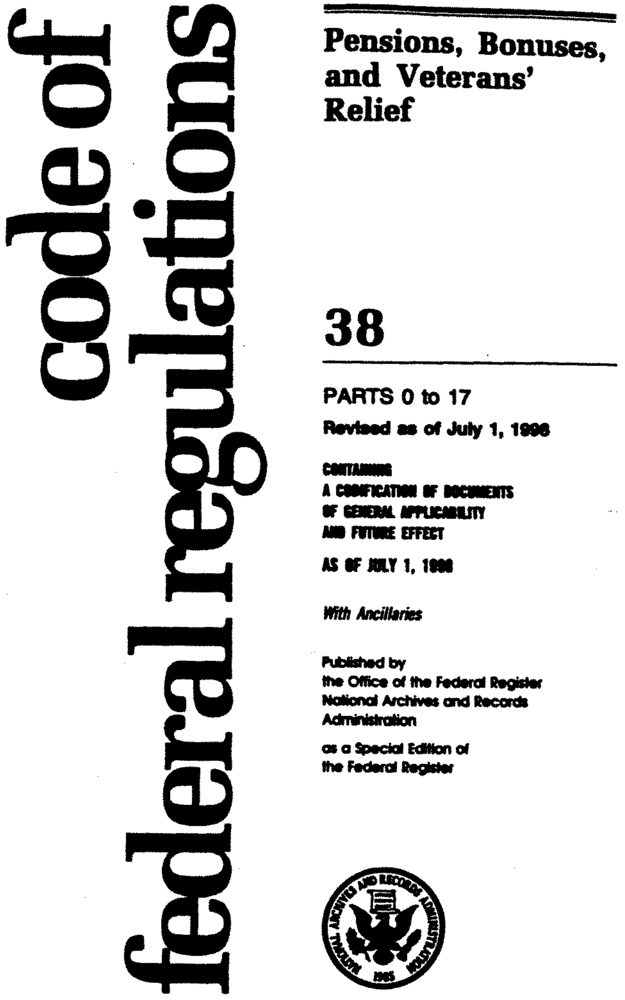
(2) Be attached to or regularly serving for one or more days aboard a naval vessel directly supporting military operations.

(3) Be actually participating as a crew member in one or more aerial flights directly supporting military operations in the areas designated above.

(4) Be serving on temporary duty for 30 consecutive days or 60 nonconsecutive days. These time limitations may be waived for people participating in actual combat operations.

d. The SWASM may be awarded posthumously to any person who lost his or her life while, or as a direct result of, participating in Operation DESERT SHIELD or Operation DESERT STORM without regard to the length of such service, if otherwise eligible.

e. One bronze service star will be worn on the suspension and service ribbon of the SWASM for participation in each designated campaign. Service stars are described in chapter 6. The designated campaigns for Southwest Asia are listed in appendix B.



code of
federal regulations

Pensions, Bonuses, and Veterans' Relief

38

PARTS 0 to 17

Revised as of July 1, 1996

CONTAINING
A CODIFICATION OF DOCUMENTS
OF GENERAL APPLICABILITY
AND FUTURE EFFECT

AS OF JULY 1, 1996

With Ancillaries

Published by
the Office of the Federal Register
National Archives and Records
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the Federal Register

1985

§ 3.317 Compensation for certain disabilities due to undiagnosed illnesses.

(a)(1) Except as provided in paragraph (c) of this section, VA shall pay compensation in accordance with chapter 11 of title 38, United States Code, to a Persian Gulf veteran who exhibits objective indications of chronic disability resulting from an illness or combination of illnesses manifested by one or more signs or symptoms such as those listed in paragraph (b) of this section, provided that such disability:

(i) Became manifest either during active military, naval, or air service in the Southwest Asia theater of operations during the Persian Gulf War, or to a degree of 10 percent or more not later than December 31, 2001; and

(ii) By history, physical examination, and laboratory tests cannot be attributed to any known clinical diagnosis.

(2) For purposes of this section, "objective indications of chronic disability" include both "signs," in the medical sense of objective evidence perceptible to an examining physician, and other, non-medical indicators that are capable of independent verification.

(3) For purposes of this section, disabilities that have existed for 6 months or more and disabilities that exhibit intermittent episodes of improvement and worsening over a 6-month period will be considered chronic. The 6-month period of chronicity will be measured from the earliest date on which the pertinent evidence establishes that the signs or symptoms of the disability first became manifest.

(4) A chronic disability resulting from an undiagnosed illness referred to in this section shall be rated using evaluation criteria from part 4 of this chapter for a disease or injury in which the functions affected, anatomical localization, or symptomatology are similar.

(5) A disability referred to in this section shall be considered service connected for purposes of all laws of the United States.

(b) For the purposes of paragraph (a)(1) of this section, signs or symptoms which may be manifestations of undiagnosed illness include, but are not limited to:

(1) Fatigue
(2) Signs or symptoms involving skin
(3) Headache
(4) Muscle pain
(5) Joint pain
(6) Neurologic signs or symptoms
(7) Neuropsychological signs or symptoms
(8) Signs or symptoms involving the respiratory system (upper or lower)
(9) Sleep disturbances
(10) Gastrointestinal signs or symptoms
(11) Cardiovascular signs or symptoms
(12) Abnormal weight loss
(13) Menstrual disorders.

(c) Compensation shall not be paid under this section:

(1) If there is affirmative evidence that an undiagnosed illness was not incurred during active military, naval, or air service in the Southwest Asia theater of operations during the Persian Gulf War; or

(2) If there is affirmative evidence that an undiagnosed illness was caused by a supervening condition or event that occurred between the veteran's most recent departure from active duty in the Southwest Asia theater of operations during the Persian Gulf War and the onset of the illness; or

(3) If there is affirmative evidence that the illness is the result of the veteran's own willful misconduct or the abuse of alcohol or drugs.

(d) For purposes of this section:

(1) The term "Persian Gulf veteran" means a veteran who served on active military, naval, or air service in the Southwest Asia theater of operations during the Persian Gulf War.

(2) The Southwest Asia theater of operations includes Iraq, Kuwait, Saudi Arabia, the neutral zone between Iraq and Saudi Arabia, Bahrain, Qatar, the United Arab Emirates, Oman, the Gulf of Aden, the Gulf of Oman, the Persian Gulf, the Arabian Sea, the Red Sea, and the airspace above these locations.

(Authority: 38 U.S.C. 1117)

[60 FR 6665, Feb. 3, 1995, as amended at 62 FR 23139, Apr. 29, 1997]

DEPARTMENT OF VETERANS AFFAIRS
Veterans Health Administration
Washington DC 20420

August 17, 1999

Mr. Paul Sullivan
Executive Director
National Gulf War Resource Center, Inc.
1224 M Street, NW
Washington, DC 20005

In Reply Refer To:

Dear Mr. Sullivan:

This is in response to your recent letter to Dr. Frances M. Murphy on behalf of veterans who served in Israel and Turkey during the Gulf War. While these veterans, as well as other Gulf War era veterans who were not deployed to the theater of operations, were exposed to many of the same potential health hazards that theater of operations veterans encountered, we believe that their experiences were significantly different.

At this time, we are not convinced that an expansion of the theater of operations is warranted. You indicated that you have contacted the House and Senate Committees on Veterans' Affairs to seek their support for legislation that would redefine the theater of operations. If such legislation is introduced and our views are solicited by a congressional committee, we will reconsider this matter.

We hope this information will be helpful to you and your organization.

Sincerely yours,

Susan H. Mather MD

Susan H. Mather, M.D., M.P.H.
Chief Public Health and Environmental

Mutagenesis vol.13 no.6 pp.643–648, 1998

Urinary and serum mutagenicity studies with rats implanted with depleted uranium or tantalum pellets

A.C.Miller[1,5], A.F.Fuciarelli[3], W.E.Jackson[1], E.J.Ejnik[1], C.Emond[2], S.Strocko[2], J.Hogan[2], N.Page[4] and T.Pellmar[2]

[1]Applied Cellular Radiobiology Department and [2]Radiation Pathophysiology Department, Armed Forces Radiobiology Research Institute, Bethesda, MD 20889-5603, [3]Pacific Northwest Laboratories, EMP Department, Richland, WA and [4]Molecular Pharmacology Branch, Division of Cancer Treatment, National Cancer Institute, National Institute Health, Bethesda, MD 20892, USA

During the 1991 Persian Gulf War several US military personnel were wounded by shrapnel fragments consisting of depleted uranium. These fragments were treated as conventional shrapnel and were not surgically removed to spare excessive tissue damage. Uranium bioassays conducted over a year after the initial uranium injury indicated a significant increase in urine uranium levels above natural background levels. The potential mutagenic effects of depleted uranium are unknown. To assess the potential mutagenic effects of long-term exposure to internalized depleted uranium, Sprague–Dawley rats were implanted with depleted uranium and their urine and serum were evaluated for mutagenic potential at various times after pellet implantation using the Ames *Salmonella* reversion assay. Tantalum, an inert metal widely used in prosthetic devices was used for comparison. Enhancement of mutagenic activity in *Salmonella typhiurium* strain TA98 and the Ames II™ mixed strains (TA7001–7006) was observed in urine samples from animals implanted with depleted uranium pellets. In contrast, urine samples from animals implanted with tantalum did not show a significant enhancement of mutagenic activity in these strains. In depleted uranium-implanted animals, urine mutagenicity increased in a dose- and time-dependent manner demonstrating a strong positive correlation with urine uranium levels ($r = 0.995$, $P < 0.001$). There was no mutagenic enhancement of any bacterial strain detected in the sera of animals implanted with either depleted uranium or tantalum pellets. The results suggest that uranium content in the urine is correlated with urine mutagenicity and that urinary mutagenicity might be used as a biomarker to detect exposure to internalized uranium.

Introduction

Several US military personnel participating in Operation Desert Storm were wounded in friendly fire accidents and have retained large fragments of the radioactive metal depleted uranium (DU) in their bodies. DU, used as an effective material in kinetic energy penetrators, is ~1.7-fold as dense as lead (19 versus 11.35 g/cm) and is chemically similar to natural uranium (National Research Council Committee on the Biological Effects of Ionizing Radiation, 1988). While the chemical and physical properties of DU and natural uranium are essentially identical, their radiological properties are different. Natural uranium consists of three isotopes, ^{238}U (99.276%), ^{235}U (0.718%) and ^{234}U (0.0056%), and during the enrichment process two products are produced, enriched uranium and DU, which contain different relative ratios of the three isotopes. The resultant DU contains ^{238}U (99.8%), ^{235}U (0.20%) and ^{234}U (0.001%). DU is therefore ~60% as radioactive as naturally occurring uranium, since it has essentially been depleted of ^{235}U and ^{234}U. As a result, the specific activity of DU is significantly less than natural uranium (0.4 versus 0.7 µCi/g, respectively).

DU internalization, in contrast to occupational uranium exposure, presents a unique toxicological problem, because it combines chemical toxicity with radiological exposure. While reports have linked occupational uranium exposure to lung carcinogenesis, it is believed that this is due to inhalation of the uranium decay product radon gas and the chemical toxicity of uranium is not involved (National Research Council Committee on the Biological Effects of Ionizing Radiation, 1988; Vahakangas *et al.*, 1992). Therefore, limited data exist to permit an accurate assessment of health risks from embedded DU fragments. Furthermore, the chemical toxicity of acute, short-term exposures to uranium has clearly been demonstrated in animals and humans (Wrenn *et al.*, 1985, 1990), while the long-term health risks associated with chronic internal exposure are not as well defined (National Research Council Committee on the Biological Effects of Ionizing Radiation, 1988). In view of medical management questions relevant to current and possible future incidents of DU internalization, examination of potential mutagenic effects of DU internalization are critical and will assist in an understanding of the etiology of potential disease development.

The goal of the current study was to conduct mutagenicity testing of the urine and serum samples obtained from rats implanted with either DU or tantalum pellets using the Ames reversion assay. We wanted to determine if there was a time- or metal dose-dependent relationship to urine mutagenicity. Additionally, we wanted to evaluate the relationship between urine uranium levels and mutagenic potential. The data strongly indicate that urine mutagenicity is correlated with increased urine uranium content. The implications of these results to the development of a monitoring program designed to assess the health effects of chronic exposure to internalized DU in humans is discussed.

Materials and methods

Experimental animals

Studies were conducted using male Sprague–Dawley inbred rats, weighing 200–250 g, ~10 weeks old at the time of pellet implantation. The animals were housed in an AAALAC-accredited facility in accordance with the *Guide for the Care and Use of Laboratory Animals* (NIH Publication no. 86-23). Upon arrival animals were quarantined and screened for diseases. Except during urine collection, all animals were housed in plastic microisolator rat cages with hardwood chips as bedding and were on a 12 h light/dark cycle. Commercial rodent chow and water were provided *ad libitum*.

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[5]To whom correspondence should be addressed. Tel: +1 301 295 9232; Fax: +1 301 295 6503; Email: millera@mx.afrri.usuhs.mil

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Metal fragments

DU fragments consisting of 99.25% DU and 0.75% titanium by weight were obtained from Oak Ridge National Laboratories (Oak Ridge, TN). The uranium isotopes present are ^{238}U (99.75%), ^{235}U (0.20%) and trace levels of ^{234}U. This is the same DU alloy used in US military munitions. Tantalum (Ta) fragments were obtained from Alfa Products (Ward Hill, MA). Ta was chosen as the control metal because it is biologically inert (Johansson *et al.*, 1990) with a similar mass to uranium and is frequently used in human prostheses (Hockley *et al.*, 1990; Strecker *et al.*, 1993). Each fragment is ~1 mm diameter×2 mm long.

Experimental groups

Rats were divided into five experimental groups: (i) non-surgical controls; (ii) Ta controls; (iii) DU low dose; (iv) DU medium dose; (v) DU high dose. Four time periods for assessment were chosen: (i) 0 days; (ii) 6 months; (iii) 12 months; (iv) 18 months. All surgically implanted animals had a total of 20 pellets of either Ta or DU or a mixture. Low dose DU rats were implanted with 4 DU pellets and 16 Ta pellets. Medium dose DU rats were implanted with 10 DU and 10 Ta pellets. The high dose DU rats were implanted with 20 DU pellets. Initially 10–12 animals were implanted per group/time period, however, for most analyses eight animals were used. The 0 time point included eight animals and these animals had no implants of any type. For the purposes of comparison, the treatment groups were compared with the animals with no implants at the same time period unless otherwise noted.

Pellet implantation surgery

The DU and Ta pellets were cleaned and chemically sterilized prior to implantation. Pellets were immersed in industrial detergent, rinsed in absolute alcohol, soaked in 50% nitric acid solution for 3 min and then rinsed with sterile water. Animals were anesthetized with ketamine hydrochloride (80 mg/kg) in combination with xylazine hydrochloride (4 mg/kg), given i.p. Fragments were implanted within the gastrocnemius muscle and were spaced ~8–10 mm apart on the lateral side of each leg. Prior to surgery, the surgical sites were shaved and cleansed with betadine. Scalpel incisions were made through the skin and pellets were inserted into the muscle with a 16 gauge needle with plunger. Incisions were closed with absorbable sutures and surgical cement. Rats were closely monitored following surgery until they were ambulatory. The surgical sites were regularly examined by a veterinarian for signs of inflammation, infection and local DU toxicity.

Urine and serum sample preparation

Urine and serum samples were collected from different populations of rats at 6, 12 and 18 months after pellet implantation. Rats were placed individually in metabolic cages for 24 h to collect the urine. The 24 h urine collection sample was obtained from each rat and the volume recorded (10–20 ml). Four milliliters of the urine collected from each individual animal were set aside for urine mutagenicity testing; the remainder was used for uranium and chemical analysis. Urine uranium content was analyzed by Battelle (Pacific Northwest Laboratory). Urine was filtered to remove any debris and frozen until analysis.

Frozen urine for mutagenicity testing was thawed and the urine from 8 animals/treatment group was combined to make a total volume of 32 ml urine/treatment group. Filtered urine was passed over chromatographic columns containing Amberlite XAD-4 resin. The effluents were collected and passed through a column packed with Amberlite XAD-8 resin. Resins were purified by Soxhlet extraction before use. Use of these columns allowed the collection of a hydrophobic urine fraction (XAD-4) and a hydrophilic fraction (XAD-8). Furthermore, preliminary tests indicated that use of either C18 resin or cyanopropyl columns resulted in an 18 or 15% reduction in mass recovery, respectively (data not shown). The column was successively washed with 10 ml distilled water and eluted with acetone. The dry extracts were dissolved in DMSO (320 μl). This process resulted in a 100× concentrate.

For the serum mutagenicity studies, 8 rats/treatment group were used. At the designated time intervals (6, 12 and 18 months), the animals were killed and blood was obtained from the aorta. Serum was separated by centrifugation (5 min at 3000 *g*) and was vacuum dialyzed through a dialysis tube with a cut-off value of 30,000 (Miller *et al.*, 1993; Sanes *et al.*, 1994).

Ames Salmonella reversion assay

To assess urine and serum mutagenicity, the *Salmonella* bacterial reversion assay, developed by Maron and Ames (1983), was used. Specifically, the Ames II™ mutagenicity assay from Xenometrix allowed rapid assessment of the mutagenic potential of the urine and serum samples. The two strains used were the Ames II™ mixed strains and the frameshift tester strain TA98. AmesII™ mixed strains contains equal numbers of the cells of each of six strains (TA7001–7006). Individually, these strains revert by only one specific base pair substitution out of six possible changes. Therefore, when mixed, all six base substitution mutations can be represented in one culture (Gee *et al.*, 1994). A complete description of genotypes can be found elsewhere (Gee *et al.*, 1994).

Aliquots of 10 μl urine extracts or 1000 μl dialyzed sera were incorporated into three plates inoculated with either *Salmonella* strain TA98 or the Ames II™ TA7001–7006 strains without metabolic activation. The dose of the urine tested was 1 ml equivalent/plate. This experiment was repeated three times on different days. Sensitivity of the strains was assessed with positive and negative controls as previously done (Gee *et al.*, 1994) and several revertant colonies were randomly selected for verification according to Maron and Ames (1983). The results are expressed as revertants/μmol creatinine after adjustment for urinary creatinine concentration. Statistical analysis included the Student's unpaired *t*-test to determine the level of significance. Correlation between biomarker values were calculated using Pearson's correlation test.

Uranium measurements

Frozen urine and serum samples were shipped overnight on dry ice to Battelle Pacific Northwest Laboratories for analysis of uranium content. Samples were prepared by wet ashing and were analyzed with a Kinetic Phosphorescence analyzer (KPA-11; Chemchek Instruments Inc., Richland, WA) (Brina and Miller, 1992). Calibration curves were established prior to sample analysis; measurements included analysis of relative standard deviations and correlation coefficients of the luminescence decay curve.

Results

A significant elevation in mutagenic potential was observed with the XAD-4 and XAD-8 fractions of urine that was dependent on both the length of time and number of DU pellets implanted. Figure 1A shows that the XAD-4 fraction of urine collected from rats implanted with DU pellets induced a significant increase in the revertant number of the TA98 strain at each assessment point (6, 12 and 18 months). The mutagenic potential showed a steady increase through the first 12 months after DU pellet implantation for animals with 4, 10 or 20 DU pellets. At 18 months, however, the XAD-4 urine fraction from animals with the highest dose of DU implanted (20 DU pellets) resulted in a revertant number that was not statistically different from the number seen at 12 months in animals with 20 DU pellets (12 months, 287 ± 42 revertants/μmol creatinine versus 18 months, 390 ± 91 revertants/μmol creatinine). In contrast to the DU-implanted rats, the animals that had no or tantalum implants did not demonstrate any increase in the mutation yield of strain TA98. Results with the XAD-8 urine concentrate indicated that animals implanted with either 10 or 20 DU pellets exhibited a statistically significant increase ($P < 0.01$) in mutagenic potential at 12 and 18 months after pellet implantation in comparison with animals with no or tantalum implants at those same time periods. No significant increase in mutagenicity of the XAD-8 fraction was observed in animals with the lowest number of DU pellets (4) or in those with tantalum implants using strain TA98 at any of the time periods. Statistical analysis revealed that there was no significant difference between the number of revertants at 12 and 18 months in animals with either 10 or 20 DU pellets.

The mutagenic potential of both the XAD-4 and XAD-8 fractions was also examined using the Ames II™ mixed strains (TA7001–TA7006). Both urine fractions showed a significant increase in mutagenic activity that was dependent on time and DU pellet number (Table I). The mutagenic activity of the XAD-4 fraction from DU-implanted animals exhibited variable elevation at 6 months after pellet implantation. However, there was a significant increase in the mutagenicity of the XAD-4 fraction at 12 and 18 months that was both time- and DU dose-dependent in comparison with animals with no or tantalum implants. Statistical analysis demonstrated that at 18 months, however, the XAD-4 urine fraction from animals with any dose of DU implanted (4, 10 or 20 DU pellets) resulted in a revertant number that was not statistically different from the

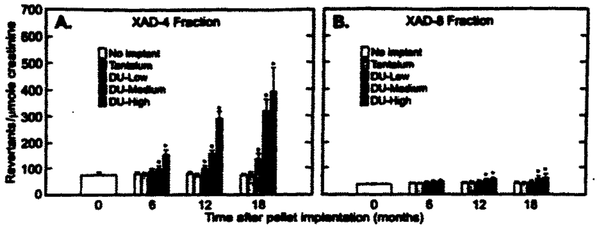

Fig. 1. Number of revertant clones in strain TA98/μmol creatinine after treatment with the urinary fractions of animal implanted with either no metal (☐), tantalum (▨) or 4 (■), 10 (■) or 20 (■) pellets of DU at increasing times after pellet implantation: (A) XAD-4 fraction; (B) XAD-8 fraction. Using a urine extract dose of 1 ml equivalent/plate, the number of revertants/plate was determined. Mutagenicity data were calculated after adjustment for urinary creatinine concentrations. At each time point, the bars that are statistically different from the no implant controls at that time point are marked with an asterisk ($P < 0.05$ using Student's t-test).

Table I. Mutagenicity data of urinary fractions from DU- or tantalum-implanted animals using the Ames II™ mixed strains: comparison with animals with no implants[a]

Time (months)	Dose[b]	Mutagenicity (revertants/μmol creatinine)	
		XAD-4 fraction[c]	XAD-8 fraction[c]
0	None	10.3 ± 1.0	16.3 ± 1.4
6	None	11.3 ± 1.0	16.5 ± 1.8
	Tantalum	11.0 ± 1.2	14.0 ± 1.2
	DU low	12.0 ± 1.0	27.0 ± 2.8[d]
	DU medium	21.5 ± 1.9[d]	50.1 ± 5.1[d]
	DU high	14.0 ± 1.7	89.9 ± 8.8[d]
12	None	11.3 ± 1.2	14.9 ± 1.7
	Tantalum	12.6 ± 2.1	16.1 ± 1.6
	DU low	16.5 ± 1.5[d]	52.8 ± 5.8[d]
	DU medium	24.9 ± 2.3[d]	79.9 ± 7.9[d]
	DU high	36.7 ± 3.5[d]	184.4 ± 18.8[d]
18	None	12.0 ± 1.3	16.1 ± 1.6
	Tantalum	11.4 ± 1.6	14.2 ± 1.4
	DU low	18.4 ± 2.2[d]	49.9 ± 9.3[d]
	DU medium	33.2 ± 4.7[d]	99.9 ± 23.0[d]
	DU high	39.2 ± 8.7[d]	170 ± 40.1[d]

[a] Ames II™ mixed strains contains an equimolar mixture of strains TA7001–TA7006. For a complete description of strain genotype see Gee *et al.* (1994).

[b] Dose of metal: DU low, 4 pellets; DU medium, 10 pellets; DU high, 20 pellets; tantalum, 20 pellets.

[c] Using a urine extract dose of 1 ml equivalent/plate, the number of revertants/plate was determined. Mutagenicity data were calculated after adjustment for urinary creatinine concentrations.

[d] Statistically significant from animals with no implants assessed at the same time period ($P < 0.05$).

revertant number seen at 12 months (Table I). For example, with 20 DU pellets (12 months, 36.7 ± 3.5 revertants/μmol creatinine versus 18 months, 39.2 ± 8.7 revertants/μmol creatinine). In contrast, the XAD-8 fraction demonstrated a rapid increase in mutagenic potential, with animals implanted with the lowest number of DU pellets (4) even showing a significant increase in revertant colonies 6 months after pellet implantation. Similar to the results with the TA98 strain, urine from non-surgical control animals or from those with tantalum implants did not exhibit any significant increase in mutagenicity. Again, the number of revertants appeared to plateau at 12 months, since the number of revertants at 18 months showed no statistically significant increase from the number observed at 12 months for all doses of DU.

In contrast to the results obtained with urine from DU-implanted animals, the sera from these animals did not demonstrate any enhancement of the mutation yield in the TA98 strain nor in the mixed strains (TA7001–7006) (Table II). Similarly, the sera from non-surgical control animals and from those with tantalum implants did not exhibit any alteration in mutagenic potential.

Urine and serum were analyzed for uranium content. The data in Table III illustrate that animals implanted with DU pellets exhibited both a time- and dose-dependent increase in urine uranium levels up to 12 months after pellet implantation. At 18 months, however, the urine uranium levels either decreased (4 and 20 pellet groups) in comparison with the levels at 12 months or remained the same (10 pellet group). Non-surgical controls or tantalum-implanted animals did not demonstrate any significant change in their urine uranium levels at the same time points (Table III). To determine what, if any, effect the urine fractionation/chromatographic process had on the urine uranium content, the eluates were analyzed for uranium content. Data demonstrated that the hydrophobic (XAD-4) and hydrophilic (XAD-8) fractions contained 42 ± 4% and 58 ± 6% of the total unfractionated urine uranium, respectively. These data suggest that very little uranium was lost during the urine fractionation process.

In contrast to the urine analysis, serum uranium analysis demonstrated that the content of uranium in the serum of the DU-implanted animals was not significantly altered from controls at 6, 12 or 18 months after pellet implantation (data not shown).

The correlation between the urine uranium levels and urine mutagenicity was evaluated using urine (XAD-8 fraction, tested with the Ames II mixed strains) obtained from animals implanted with DU (4, 10 or 20 pellets) or tantalum for 12 months. A strong positive correlation was obtained between urinary mutagenicity and urine uranium content, as seen in Figure 2 (Pearson $r = 0.995$, $P < 0.001$) for measurements made using urine obtained from animals 12 months after pellet implantation. A similar correlation analysis was done with urine uranium levels and urine mutagenicity from animals at 6 and 18 months after pellet implantation (data not shown).

Table II. Mutagenicity of serum samples from DU- or tantalum-implanted animals: number of revertant colonies/ml serum using strain TA98 or Ames II™ mixed strains[a]

Time (months)	Dose[b]	Mutagenicity (revertants/ml serum)	
		Strain TA98[c]	Mixed strains[d]
0	None	45 ± 4	11.2 ± 1.2
	Tantalum	43 ± 4	11.5 ± 1.0
	DU low	46 ± 5	13.2 ± 1.4
	DU medium	47 ± 4	11.2 ± 1.2
	DU high	44 ± 5	11.9 ± 1.0
6	None	43 ± 5	11.5 ± 1.1
	Tantalum	52 ± 6	10.5 ± 1.2
	DU low	49 ± 5	10.7 ± 1.0
	DU medium	60 ± 13	12.9 ± 1.2
	DU high	43 ± 4	11.6 ± 9.0
12	None	49 ± 5	13.4 ± 1.5
	Tantalum	51 ± 6	12.0 ± 1.2
	DU low	55 ± 6	10.9 ± 1.5
	DU medium	49 ± 4	11.1 ± 9.0
	DU high	60 ± 9	13.5 ± 2.0
18	None	55 ± 6	11.8 ± 1.4
	Tantalum	59 ± 8	11.9 ± 1.4
	DU low	57 ± 7	12.2 ± 1.0
	DU medium	56 ± 6	14.2 ± 1.9
	DU high	42 ± 8	12.1 ± 1.1

[a] Ames II™ mixed strains contains an equimolar mixture of strains TA7001–TA7006. For a complete description of strain genotype see Gee *et al.* (1994).
[b] Dose of metal: DU low, 4 pellets; DU medium, 10 pellets; DU high, 20 pellets; tantalum, 20 pellets.
[c] Using a serum dose of 1 ml/plate, the number of strain TA98 revertants/plate/ml serum was determined.
[d] Using a serum dose of 1 ml/plate, the number of Ames II™ mixed strain revertants/plate/ml serum was determined.

Table III. Urine uranium level of DU- or tantalum-implanted animals: comparison with animals with no implants

Time (months)	Implant[a]	Uranium level[b] (ng/µmol creatinine)
0	None	1.91 ± 0.31
6	None	1.79 ± 0.34
	Tantalum	2.64 ± 0.74
	DU low	48.01 ± 14.02[c]
	DU medium	251.60 ± 53.80[c]
	DU high	670.80 ± 152.58[c]
12	None	1.55 ± 0.37
	Tantalum	2.99 ± 0.92
	DU low	220.20 ± 30.01[c]
	DU medium	340.10 ± 49.75[c]
	DU high	1002.21 ± 80.22[c]
18	None	1.38 ± 0.54
	Tantalum	3.13 ± 1.02
	DU low	151.27 ± 58.00[c]
	DU medium	533.05 ± 290.15[c]
	DU high	900.01 ± 127.43[c]

[a] Dose of metal: DU low, 4 pellets; DU medium, 10 pellets; DU high, 20 pellets; tantalum, 20 pellets.
[b] Urine uranium content in ng/µmol creatinine.
[c] Statistically significant from control levels in animals with no implants ($P < 0.05$).

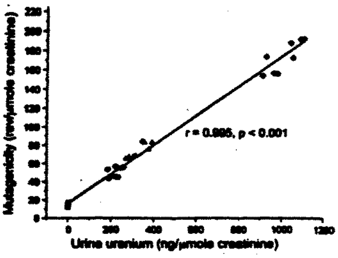

Fig. 2. Correlation (Pearson *r*) between urinary mutagenicity (revertants/µmol creatinine) and urinary content of uranium (ng/µmol creatinine) of animals implanted with either low, medium or high doses of DU, tantalum or no implant (*n* = 40, 8 per group) at 12 months. Mutagenicity data were calculated after adjustment for urinary creatinine levels. Correlation between uranium and mutagenicity values was calculated using Pearson's correlation test.

Similar to that observed at 12 months, a positive correlation was found between urinary mutagenicity and urine uranium content for 6 and 18 month data (6 months, Pearson r = 0.934, $P < 0.001$; 18 months, Pearson r = 0.83, $P < 0.001$). This analysis strongly argues that the uranium-associated urinary mutagenesis was due to the presence of uranium in the urine.

Discussion

Several US soldiers were wounded by shrapnel fragments consisting of DU during the 1991 Gulf War. Uranium bioassays conducted over a year after the initial uranium injury indicated the presence of uranium in the urine in excess of natural background at up to 50 µg U/l urine; the natural background uranium urine excretion rate is typically 0.6 µg/day (US Army Environmental Policy Institute, 1995). Although the soldiers with the embedded DU fragments had urine uranium levels well above background a year after the initial uranium injury, threshold toxic uranium urine excretion rates are typically 1000 µg/day (National Research Council Committee on the Biological Effects of Ionizing Radiation, 1989), which is significantly higher than the injured soldiers' 1 year levels. The Department of Veterans Affairs is monitoring these soldiers in a follow-up study to assess their current urine uranium levels.

Studies of the long-term health consequences of other forms of uranium, e.g. natural uranium, and types of exposure, e.g. inhalation, have demonstrated that uranium exposure is linked to lung carcinogenesis (Vahakangas *et al.*, 1992; Jostes, 1996). However, embedded DU fragments present a radiologically and toxicologically unique situation with unknown health risks and there is limited information regarding its mutagenic or carcinogenic potential. Furthermore, urinary mutagenicity has been widely used as a general biomarker of exposure to genotoxic agents and may be an effective tool to complement human population monitoring of individuals exposed to DU.

This study was conducted to determine if the urine and/or serum of rats implanted with DU pellets was mutagenic. The data demonstrate that with increasing urine uranium content, urine mutagenicity increased. Urine from rats implanted with a greater number of DU pellets had greater amounts of uranium and greater mutagenic potential, suggesting that uranium in the urine was at least one of the potential mutagenic components of the urine tested. Both the uranium levels and mutagenicity steadily increased between 0 and 12 months, indicating the time dependence of this increase in urine mutagenic potential.

Even the lowest number of implanted DU pellets resulted in mutagenic urine as the pellet exposure time increased. At 18 months both uranium content and mutagenicity leveled off or decreased, further arguing for this correlation. This association is additionally supported by the similar analysis of serum samples. They did not contain increased levels of uranium nor did they demonstrate any mutagenic activity, indicating that there were very low serum levels of the mutagenic substance(s).

The mutagenicity pattern indicates that both the hydrophobic (XAD-4) and hydrophilic (XAD-8) fractions from DU-implanted animals contain both frameshift and base pair substitution mutagens to varying extents, depending upon the length of time after implantation and the number of DU pellets implanted. The high chemical reactivity of uranium in biological fluids is well known. It has been shown to complex with a variety of substances such as carbonates, proteins, minerals and phospholipids (Dounce and Flagg, 1949; Neuman and Tishkoff, 1953; Blake *et al.*, 1956; Cooke and Holt, 1974; Schullery and Miller, 1977). The ability of specific bacteria such as *Escherichia coli* and *Citrobacter* spp. to accumulate uranium from solution has also been observed (Macaskie *et al.*, 1992). Therefore, it is possible to speculate that uranium, possibly complexed with substances found in either the hydrophobic and hydrophilic fractions of the urine, causes an increase in mutagenic potential.

The strong positive relationship between urine uranium levels and mutagenicity argues that urine uranium may be the substance primarily responsible for the urine mutagenicity. However, other factors can affect mutagenicity and urine analysis. The measurement of both urine uranium and mutagenic potential, particularly at the 18 month time point, could have been affected by the advanced age of the animals tested (21 months old). Aging has been shown to be causally related to both renal dysfunction (Li *et al.*, 1996) and increased mutagenicity in humans (Scarlett *et al.*, 1990). The urine mutagenicity of control animals (both non-surgical and Ta-implanted), however, did not exhibit significant differences with advanced age. Another consideration is the potential nephrotoxicity of the implanted DU. It is possible that cellular changes in the kidney resulting from DU exposure could affect interpretation of the results. It is important to note, however, that preliminary histological assessment of the kidney revealed no abnormal pathology or precancerous lesions (unpublished observations).

Our report is the first showing that internalized DU can result in a significant enhancement of urinary mutagenicity. This is markedly different from other studies showing that high specific activity uranium exposure *in vitro* is mutagenic [using several mutagenicity assays including the Ames test and the *HPRT* T lymphocyte cloning assay (Roos *et al.*, 1988; Baltschulkat and Horneck, 1991; Metting *et al.*, 1992)]. As discussed previously, occupational exposure of uranium miners to the uranium decay product radon has not only been linked to lung carcinogenesis, but to mutagenicity (Sram *et al.*, 1993; Hussain *et al.*, 1997). While the presence of other potential genotoxic agents in the urine cannot be ruled out, the lack of mutagenic potential of the urine from animals with tantalum implants or those without any metal implants strongly suggests that the uranium is potentially responsible for the urine mutagenicity. Additionally, the low uranium content of the serum, concomitant with the lack of serum mutagenicity, further argues that uranium is one of the mutagenic components in the urine. Other studies are needed to definitively determine what other substances in the urine of the animals with implanted DU are potentially responsible for the urinary mutagenicity observed here.

Urinary mutagenicity has been used as a biomarker as an integral component of human population monitoring and disease epidemiology (DeMarini *et al.*, 1997). Its effectiveness as a biomarker for genotoxic exposure has been demonstrated among people who smoke cigarettes (Yamasaki and Ames, 1977), were exposed to antineoplastic drugs (Falck *et al.*, 1979; Nguyen *et al.*, 1982) or were occupationally exposed to chemicals (Dolara *et al.*, 1981) or to sewage (Scarlett-Kranz *et al.*, 1986). Despite its inability to identify the specific mutagen(s) in the urine, urine mutagenicity testing is a cost-effective, general biomarker of exposure to genotoxic agents. Our data suggest that this type of biomarker analysis might also be an effective tool in a program designed to assess the health effects of chronic exposure to internalized DU in humans.

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Distribution of Uranium in Rats Implanted with Depleted Uranium Pellets

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During the Persian Gulf War, soldiers were injured with depleted uranium (DU) fragments. To assess the potential health risks associated with chronic exposure to DU, Sprague Dawley rats were surgically implanted with DU pellets at 3 dose levels (low, medium and high). Biologically inert tantalum (Ta) pellets were used as controls. At 1 day and 6, 12, and 18 months after implantation, the rats were euthanized and tissue samples collected. Using kinetic phosphorimetry, uranium levels were measured. As early as 1 day after pellet implantation and at all subsequent sample times, the greatest concentrations of uranium were in the kidney and tibia. At all time points, uranium concentrations in kidney and bone (tibia and skull) were significantly greater in the high-dose rats than in the Ta-control group. By 18 months post-implantation, the uranium concentration in kidney and bone of low-dose animals was significantly different from that in the Ta controls. Significant concentrations of uranium were excreted in the urine throughout the 18 months of the study (224 ± 32 ng U/ml urine in low-dose rats and 1010 ± 87 ng U/ml urine in high-dose rats at 12 months). Many other tissues (muscle, spleen, liver, heart, lung, brain, lymph nodes, and testicles) contained significant concentrations of uranium in the implanted animals. From these results, we conclude that kidney and bone are the primary reservoirs for uranium redistributed from intramuscularly embedded fragments. The accumulations in brain, lymph nodes, and testicles suggest the potential for unanticipated physiological consequences of exposure to uranium through this route.

Key Words: depleted uranium fragments; distribution; kidney; bone; brain; kinetic phosphorimetry.

The enrichment process of uranium results in two products, one enriched and one depleted of the fissionable isotope ^{235}U. Depleted uranium (DU), alloyed with titanium to retard oxidation, was first deployed in military armaments during the Persian Gulf War. In this conflict, several soldiers were injured by DU fragments. Since surgical removal can produce excessive tissue damage, DU fragments were treated as conventional shrapnel and left in place in the wounded soldiers. The present study was initiated to assess the potential toxicity associated with long-term exposure to fragments of DU.

There is an extensive literature on the toxicity of uranium from exposures through inhalation, ingestion, and injection (Voegtlin and Hodge, 1949; 1953; ATSDR, 1997). The biological handling and distribution of uranium are dependent on both the chemical form and the route of exposure of the uranium. Soluble uranium compounds are generally more systemically toxic than the insoluble forms. The insoluble salts are more likely to be retained at the site of entry (e.g., the lungs after inhalation) (Leach *et al.*, 1970). Animal studies (Ballou *et al.*, 1986; Diamond *et al.*, 1989; La Touche *et al.*, 1987; Morrow *et al.*, 1982; Neuman *et al.*, 1948; Voegtlin and Hodge, 1949; Walinder, 1989) and epidemiological assessments (Kathren *et al.*, 1989; Singh *et al.*, 1987) demonstrate that kidney and bone are the primary reservoirs for uranium regardless of the route of exposure. With acute exposures, absorbed uranium is quickly cleared from the blood stream and mostly excreted in the urine within 24 h. Uranium that is not excreted is reabsorbed by the proximal tubules and accumulates in the kidney. As a result of uranium accumulation, the kidney is the critical target for uranium toxicity (Diamond, 1989; Diamond *et al.*, 1989; Kocher, 1989; Leggett, 1989). The skeleton also acts as a major reservoir for uranium (Ballou *et al.*, 1986; La Touche *et al.*, 1987; Leggett, 1994; Morrow *et al.*, 1982). Other organs, including liver and spleen, accumulate uranium after acute exposure. Uranium is slowly released from these stores back into circulation and excreted from the body (Walinder, 1989; La Touche *et al.*, 1987).

Only a few studies evaluated the distribution of uranium after chronic exposures using animal models. Ortega *et al.* (1989) supplied uranyl acetate dihydrate in the drinking water of rats for 4 weeks. At the end of this time period, high levels of uranium were measured in kidney, bone, and muscle. Liver, heart, lung, and thyroid also showed accumulations. Leach *et al.* (1970; 1973) exposed monkeys, dogs, and rats to dust particles of natural uranium dioxide. After a 5-year exposure in monkeys and dogs and a one-year exposure in rats, uranium was found predominantly (about 90% of total) in the lungs and the tracheobronchial lymph nodes. The metal was also observed in kidney, femur, spleen, and liver. Levels in the lung reached a maximum within a year while other sites continued to accumulate uranium for at least two years.

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No studies have assessed the long-term health consequences of exposure to uranium fragments. Furthermore, previous studies have focused on natural or enriched forms of uranium. The current study was designed to determine the distribution of uranium that results from fragments of DU embedded in muscle of the rat over the course of 18 months.

MATERIALS AND METHODS

Chemicals. DU pellets (Oak Ridge National Laboratories, Oak Ridge, TN) consisted of 99.25% DU and 0.75% titanium by weight, with the uranium as isotopes ^{238}U (99.75%), ^{235}U (0.20%) and trace levels of ^{234}U. The pellets were made from the metal left over from the manufacture of U.S. military munitions. Tantalum (Ta) fragments (Alfa Products, Ward Hill, MA) were used as control pellets because the metal is biologically inert, with a mass similar to uranium, and is frequently used in human prostheses. Each pellet (both DU and Ta) was approximately 1 mm diameter × 2 mm long.

Animals and treatment. Sprague-Dawley rats (8–10 weeks of age) were maintained in an Association for Assessment and Accreditation of Laboratory Animal Care International-accredited facility in accordance with the *Guide for the Care and Use of Laboratory Animals* (National Research Council, 1996). Upon arrival, rats were quarantined and screened for diseases. Except during urine collection, all animals were housed in plastic Microisolator rat cages with hardwood chips as bedding. Commercial rodent chow (Harlan, Teklad Rodent Diet #8604, Madison, WI) and water were provided *ad libitum*. Rats were on a 12-hr light/dark cycle.

Rats were surgically implanted with sterilized DU and/or Ta pellets within the gastrocnemius muscle under anesthesia with ketamine hydrochloride (80 mg/kg) in combination with xylazine hydrochloride (4 mg/kg), given ip. All surgically-implanted rats received 20 pellets of Ta, DU or a combination. Half the total number of pellets were implanted in each thigh. Ta controls received 20 Ta pellets; low-dose DU rats, 4 DU and 16 Ta pellets; medium-dose DU rats, 10 DU and 10 Ta pellets; and high-dose DU rats, 20 DU pellets. Another set of animals served as non-surgical controls. Separate groups of animals were evaluated at 1 day, or at 1, 6, 12, or 18 months. Each experimental group consisted of 15 animals. Tissues and fluids from 5 animals of each group were sent to Battelle Northwest Operations (Richland, WA) for analysis (see below). In some groups, additional tissues were analyzed at the Armed Forces Radiobiology Research Institute.

Sample collection. Urine samples were collected from each rat, individually housed for 24 h in metabolism cages and having continuous access to food and water. The urine samples were stored at 4°C until analyzed. Because rats implanted with pellets did not survive the stress of the metabolism cages immediately after the surgery, urine samples were not collected at 1 day. Blood samples were obtained from the tail vein and centrifuged for 5 min at 3000 × g. Serum was stored at −70°C until ready for analysis. Rats were euthanized by decapitation under ketamine anesthesia. Tissues (tibia, skull, kidney, muscle, liver, spleen, brain) were harvested, frozen, and stored at −70°C until analysis for uranium content. Tissues and fluids from 5 animals of each experimental group were shipped on dry ice by overnight courier to Battelle-Northwest Operations (Richland, WA). Additional tissues from the 18-month animals (lymph nodes, testicles, teeth, feces, heart, lung, and brain areas) were analyzed using the same techniques at the Armed Forces Radiobiology Research Institute, with minor differences (1 M nitric acid was used instead of 4 M, and the samples were decanted rather than filtered).

Uranium measurement. Uranium determinations in wet-ashed tissues were performed by kinetic phosphorimetry using methods previously described by Brina and Miller (1992). Wet ashing of tissue samples began with the addition of 2 ml of 16 M nitric acid to each scintillation vial, which was followed by overnight digestion of the tissues at room temperature. The following day, samples were heated in a dry bath for several h to evaporate the initial volume of nitric acid to approximately 0.5 ml. After a short cooling period, 0.5 ml of 30% hydrogen peroxide was added to each sample, which was then heated to reduce the volume to approximately 0.5 ml. Subsequent wet ashing involved addition of 2.0 ml of 16 M nitric acid to each sample, followed by several h of heating, brief cooling, addition of 0.5 ml of 30% hydrogen peroxide, and reduction of the volume to approximately 0.5 ml. Wet ashing continued in this manner for 15 cycles over the next 5 days, after which the samples were heated to dryness, then placed in a muffle furnace at approximately 600°C for about 2 h.

Calibration curves were freshly prepared using a uranium plasma standard in 5% nitric acid (Alfa, AESAR), and concentration was checked against NIST SRM 3164. Stock solutions were prepared in 4 M nitric acid. High purity deionized water with an electrical resistance of approximately 18 megaohms was obtained from a MilliQ deionization system (Millipore Corp, Milford, MA). Final concentrations for calibration samples ranged from 0.05 ng/ml to 50.0 ng/ml for the low concentration range and 0.01 μg/ml to 10.0 μg/ml for the high concentration range.

Samples and calibration standards were dissolved by warming in 2 ml of 4 M nitric acid and filtered through Acrodisc LC 13 PVDF 0.45 μm syringe filter units (Gelman Sciences, Ann Arbor, MI) to remove any particulate matter. For analysis, 1.0 ml of sample (or standard) was dissolved in 1.5 ml of freshly prepared Uraplex reagent (Chemchek Instruments, Inc., Richland, WA).

Appropriate care was used in handling cuvettes to prevent cross contamination and to ensure low backgrounds. Cuvettes were rinsed with 3 changes of 2.0 ml of 0.5 M sulfuric acid followed by 3 changes of 2.0 ml deionized water. The caps were placed on the cuvettes for each rinse and the cuvette was inverted to rinse the cap. Addition of 1.0 ml of diluted sample was followed by addition of 1.5 ml of Uraplex reagent. The cuvettes were capped, and the sample was inverted twice to mix the reagent with the sample. The cuvette was then inserted into the instrument for a reading.

Samples were analyzed with a Kinetic Phosphorescence Analyzer (KPA-11, Chemchek Instruments Inc., Richland, WA). Background measurements were made using 4 M nitric acid. Calibration curves were developed each day prior to sample analysis, and quality assurance checks were made at frequent intervals using standard solutions of known uranium concentration. The uranium content of the series of tissue samples submitted for analysis was measured, following analysis of the background and calibration standards. Measurements included analysis of relative standard deviations (RSD) and correlation coefficients (r^2) of the luminescence decay curve.

The limit of detection of uranium using kinetic phosphorimetric analysis is 0.005 μg/l, (5 pg/ml or 5 pg/g tissue). The quantification limits varied for each tissue: 0.05 μg/l for urine, 0.1 μg/l for brain and lymph nodes, 0.4 μg/l for blood, 1 μg/l for liver, kidney, bone, spleen, teeth, and muscle. Recovery of uranium from tissues ranged from 91 ± 13% for blood to 97 ± 8% for urine.

For serum and urine samples, the concentrations are reported in ng/ml and, for all other tissues, in ng/g tissue. For samples in which the correlation coefficient (r^2) of the decay curve was less than 0.99, the data were reanalyzed by choosing appropriate time gates from the plot of luminescence intensity as a function of decay time, to achieve the best linear relationship (highest r^2 value) for the data. In general, relative standard deviations (rSD) are significantly lower on samples that have linear decay curves.

Statistical analysis. Uranium content for each organ was divided by the wet weight of the tissue and averaged for each experimental group at each time point. Data that were greater than 2 standard deviations (SD) different from the mean of the group were excluded. In all cases, a minimum of 3 measurements was included in the final averaged value. Since comparisons of the Ta control to the non-surgical control for each measurement revealed no significant differences between the two groups (2-tailed t-test, $p > 0.05$), all data were

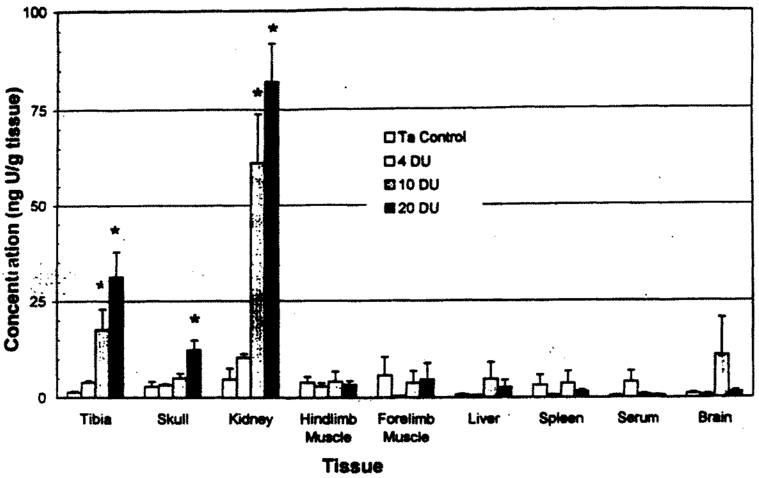

FIG. 1. Uranium concentrations measured in tissues dissected from rats euthanized 1 day after implantation of DU and Ta pellets. Rats were implanted with either 20 Ta pellets (Ta control), 4 DU and 16 Ta pellets (4 DU, low dose), 10 DU and 10 Ta pellets (10 DU, medium dose) or 20 DU pellets (20 DU, high dose). Bars represent mean ± SEM. *N*, 3–5. *Indicates significantly different from tantalum controls.

referenced to the Ta controls. Data were analyzed by a Kruskal-Wallis one-way analysis of variance. DU experimental groups were compared to Ta controls using Dunn's method of multiple comparisons. Significance was accepted at $p < 0.05$.

RESULTS

Uranium Distribution at 1 Day

Within 1 day after implantation of DU pellets, rats showed significant distribution of uranium to kidney and bone (Fig. 1). Uranium concentrations measured in other organs were not significantly different from those measured in tissues from rats in the Ta-control group. The highest levels were in kidney and varied with the number of DU pellets implanted: Ta-control group, 1.41 ± 0.33 ng U/g; low-dose group, 3.98 ± 0.54 ng U/g; medium-dose group, 17.6 ± 5.3 ng U/g; and high-dose group, 82.0 ± 9.7 ng U/g wet weight kidney. Uranium concentrations in the medium and high-dose groups, but not in the low-dose group, were significantly higher than the Ta-control group. A dose-dependent increase in uranium concentrations was also observed for the tibia reaching 31.3 ± 6.5 ng U/g in the high-dose group. In the animals in the medium and high-dose groups, the uranium levels in the tibia were significantly greater than that in the Ta controls. While uranium concentration in the skull significantly increased in the high-dose animals, the levels were lower than in the tibia (12.5 ± 2.5 ng U/g skull). The uranium concentration in the skulls of animals in the low-dose and medium-dose groups did not significantly differ from that of Ta-control animals.

Uranium Distribution at 1 Month

At 1 month following implantation, the highest concentrations of uranium were, again, in kidney and bone (Fig. 2). Levels were much greater than those observed 1 day after implantation. For example, in the high-dose group animals, uranium concentrations reached 1280 ± 320 ng U/g kidney, 1870 ± 510 ng U/g tibia, and 1240 ± 130 ng U/g skull. Deposition of uranium in the muscle of the hindlimb near the DU pellet implantation sites averaged 744 ± 370 ng U/g and ranged from 9.28 to 2170 ng U/g in animals in the high-dose group. Significant accumulations were also observed in urine.

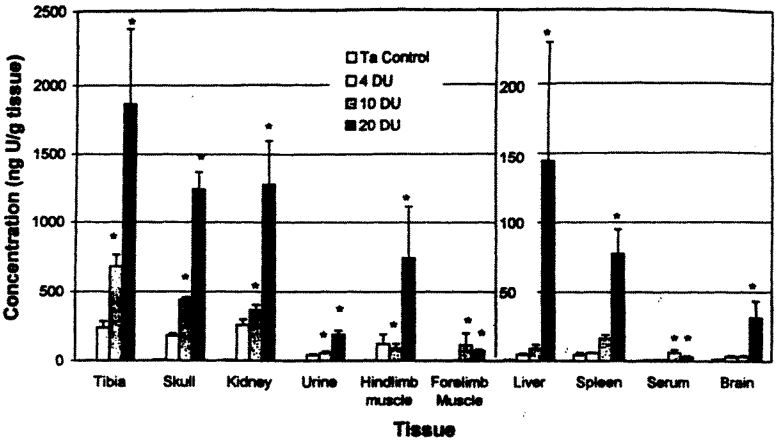

FIG. 2. Uranium concentrations measured in tissues dissected from rats euthanized 1 month after implantation of DU and Ta pellets. Bars represent mean ± SEM. *N*: 5–7. *Indicates significantly different from tantalum controls.

liver, spleen, and brain of high-dose group animals compared to the tissues in the Ta controls. The concentration of uranium in the serum was relatively low but significantly greater than that in Ta controls in the medium- and high-dose groups of animals (Ta group, 0.69 ± 0.20 ng U/ml serum; medium-dose group, 6.08 ± 2.41 ng U/ml serum; high-dose group, 3.04 ± 0.99 ng U/ml serum).

Uranium Distribution at Later Time Points

Kidney. The pattern of uranium distribution generally remained the same in rats implanted with DU for 6 months (Fig. 3), 12 months (Fig. 4) or 18 months (Fig. 5). The highest concentrations of uranium continued to be observed in kidney and bone (tibia and skull). Levels of uranium in the kidneys of rats in the high-dose group were significantly different from Ta controls at all time points. Uranium concentrations in the kidneys of rats in the low-dose group were significantly different from Ta controls at 12 and at 18 months after implantation, but not before. Uranium concentrations in the kidneys of all dose groups were observed to plateau after the 6-month time point (Fig. 6a). In the rats in the high-dose group, the concentration of uranium in kidney tissue was 6920 ± 1690 ng U/g at 6 months and was 4500 ± 770 ng U/g at 18 months.

Bone. The concentration of uranium in bone (tibia and skull) increased with dose and duration of exposure (Figs. 6b, 6c). In the medium and high-dose rats, the concentrations were significantly different from the Ta controls at all time points with the exception of the medium dose at 18 months. The uranium concentrations in tibia and skull of the low-dose group were only significantly different from the Ta controls at 18 months. Unlike the kidney, the levels in the bone of the medium- and high-dose rats continued to rise throughout the 18 month period of study. However, the bone uranium levels in the low-dose animals leveled off by 12 months. At 18 months after implantation, uranium concentrations in the high DU dose animals were 7050 ± 1370 ng U/g tibia and 3690 ± 810 ng U/g skull.

Muscle. Uranium concentration in muscle from the hindlimbs where the pellets were implanted contained, on the average, a greater concentration of uranium than muscle from the forelimbs (Figs. 2–5). Throughout the course of the study, the concentrations of uranium in the muscle were quite variable from animal to animal. At 12 months, the concentrations ranged from 6.77 to 133 ng U/g hindlimb muscle, while at 18 months the range was 59.1 to 13200 ng U/g hindlimb muscle. Despite this variability, muscle concentrations of uranium dif-

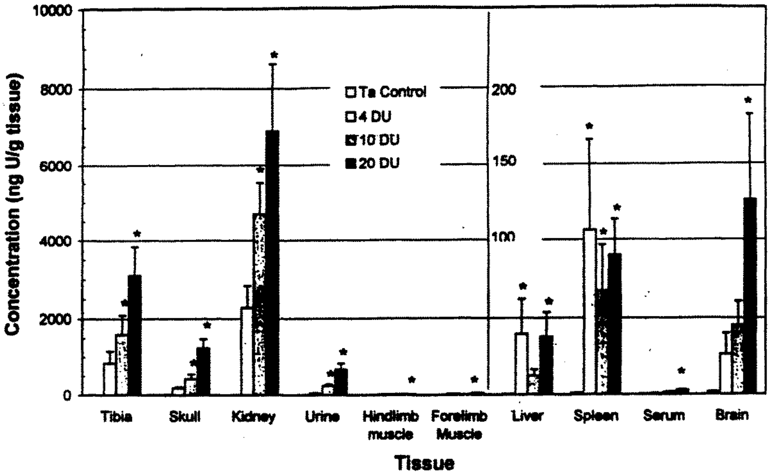

FIG. 3. Uranium concentrations measured in tissues dissected from rats euthanized 6 months after implantation of DU and Ta pellets. Bars represent mean ± SEM. N, 4–5. *Indicates significantly different from tantalum controls.

fered significantly from control at several time points. In the hindlimb of high-dose rats, the uranium concentrations were significantly different from the concentrations of Ta controls at 6 months and 18 months. At 18 months, the concentrations of uranium in both hindlimb and forelimb muscle in the low-dose group were significantly different from that in Ta controls.

Spleen and liver. In the high-dose group, uranium concentrations in liver and spleen were significantly greater than Ta controls at all time points after 1 day (Figs. 2–6). In the rats exposed to a low dose of DU, uranium concentrations in the spleen and liver were significantly different from Ta controls at 6 months but not at the later time points. Concentrations of uranium in spleen and liver did not show a strongly dose-dependent relationship. In general, the average concentrations in spleen were greater than those in liver. At 18 months after pellet implantation, the average concentrations in these tissues of the high-dose group were 188 ± 41 ng U/g in spleen and 79.9 ± 20.7 ng U/g in liver tissue.

Serum. Very low levels of uranium were observed in serum at all time points (Figs. 2–6). Uranium concentration in serum from the high-dose group was statistically different from the Ta controls at 6 months and at 18 months but not at 12 months. The maximal concentration of serum uranium was 8.09 ± 3.78 ng U/ml in the high-dose group at 18 months.

Urine. At all time points, the concentrations of uranium in the urine of medium- and high-dose rats were significantly different from the Ta controls. At 12 and 18 months, the concentration of uranium in the urine of the low-dose rats also was significantly different from control (Figs. 2–6). The uranium concentration in urine (expressed as ng U/ml) reached a maximum at 12 months post-implantation. At 18 months, the concentration in the urine of high-dose rats declined significantly (Fig. 7a). The maximal concentration obtained in the high-dose rats was 1010 ± 87 ng U/ml urine and in the low-dose rats was 224 ± 32 ng U/ml urine at 12 months post-implantation. Since the volume of urine excreted over the 24-h collection period varied with the age of the animals, the data were reanalyzed to calculate the total uranium excreted within 24 h (Fig. 7b). In the medium-dose and high-dose rats, the 24-h uranium excretion increased until 6 months post-implantation when it reached a plateau (5610 ± 1770 μg U at medium dose; 11200 ± 4000 μg U at high dose). The 24-h uranium excretion in low-dose animals rose more gradually, reaching a plateau at 12 months (2710 ± 440 μg U). At 12 and

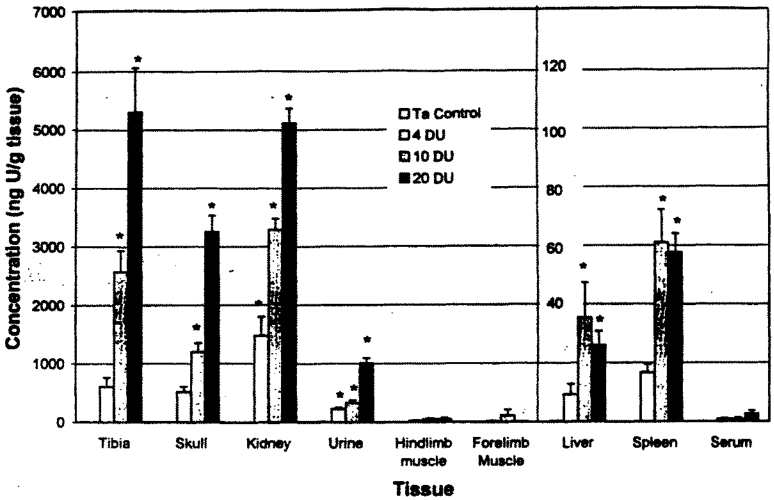

FIG. 4. Uranium concentrations measured in tissues dissected from rats euthanized 12 months after implantation of DU and Ta pellets. Bars represent mean ± SEM. N, 3–5. *Indicates significantly different from tantalum controls.

18 months, the 24-h uranium excretion was linearly related to the surface area of the embedded pellets (82 ± 7 ng/mm^2 calculated from 18-month data).

Brain. Uranium concentrations in an entire hemisphere of the rat brain were measured at 1 day, 1 month, and 6 months after pellet implantation (Figs. 1–3). At 1 and 6 months, brain concentrations of uranium were statistically different from Ta controls in the high-dose group (Figs. 2, 3). In the animals implanted for 12 months, a brain hemisphere was not available because the tissue was used for other analyses. In rats implanted with DU pellets for 18 months, several areas of the brain were independently assessed for uranium distribution. Uranium was not uniformly distributed throughout the tissue (Fig. 8). Uranium levels in this area increased in a dose-dependent fashion with the number of implanted DU pellets. In both the medium- and high-dose groups, uranium concentrations in motor cortex, frontal cortex, midbrain, and vermis were statistically greater from those in Ta controls. Uranium concentrations in the cerebellum were only significant in the high-dose group.

Other sites of accumulation. Additional tissues were analyzed from animals euthanized at 18 months (Fig. 9). Uranium concentrations in lymph nodes, testicles, teeth (with lower jaw), heart, and lung were all significantly higher than those observed in tissues collected from Ta-control animals. Similar to observations with tibia and skull, relatively high concentrations were observed in the teeth combined with lower jaw (1950 ± 270 ng U/g tissue in the high-dose group). Although high concentrations of uranium were found in the feces collected from rats in all groups, including Ta-control rats, there was no dose-dependence exhibited (approximately 1100 ng/g wet weight). These levels are probably the result of intake of uranium through the food and water which contained uranium concentrations of 360 ± 20 ng U/g and 0.25 ± 0.05 ng/ml, respectively.

DISCUSSION

The present study demonstrates that embedded fragments of DU redistribute throughout the body over many months. As in previous animal studies and epidemiological assessments, kid-

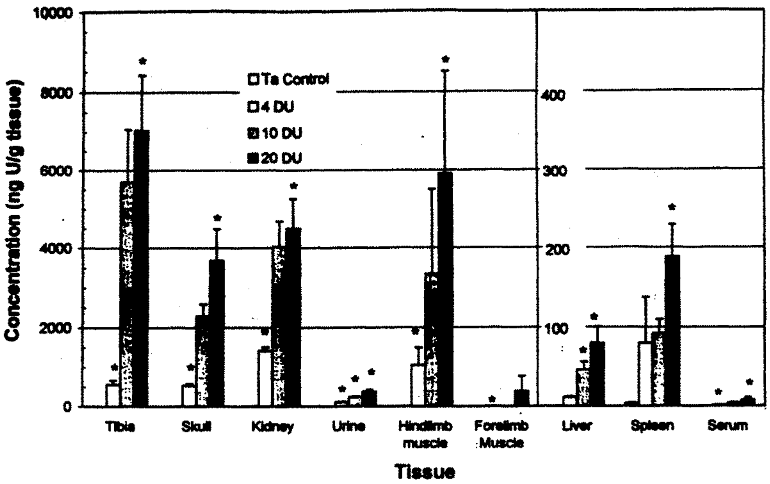

FIG. 5. Uranium concentrations measured in tissues dissected from rats euthanized 18 months after implantation of DU and Ta pellets. Bars represent mean ± SEM. For urine measurements *N*, 10–15; for liver measurements *N*, 9–13; for all other tissues *N*, 4–5. *Indicates significantly different from tantalum controls.

ney and bone were the major reservoirs for the uranium. Less anticipated was the distribution of uranium to spleen and brain.

In occupationally-exposed miners and millers (Kathren *et al.*, 1989; Singh *et al.*, 1987), uranium was found in the highest concentrations in lung, kidney, bone, and liver. In naturally-exposed populations, the distribution of uranium is very similar, although the levels are significantly lower (Dang *et al.*, 1992). Animal studies have explored the distribution of uranium following experimental inhalation, injection, and ingestion in a variety of chemical forms. Following intravenous injection, a bolus of uranium was quickly cleared from the blood, redistributed to bone and kidney, and excreted in urine (Morrow *et al.*, 1982; Neuman *et al.*, 1948; Walinder, 1989). Uranium was also distributed to spleen and liver (Walinder, 1989). Morrow *et al.*(1982) suggest that a single exposure to uranium through inhalation is handled very much like intravenous exposure. The soluble salts of uranium are rapidly cleared from the lungs and redistributed to skeleton, kidney, and liver (Ballou *et al.*, 1986).

In the DU implanted rats, the pellets served as a constant reservoir for uranium. Concentrations of uranium in bone increased throughout the 18 months of the experiment. In the rat, bones continue to grow well into adulthood. In male rats, skull has been demonstrated to continue to enlarge until 14 months of age (Savostin-Asling *et al.*, 1980). Between the ages of 12 and 24 months, the femur of male rats was found to increase in width at midshaft, although the total mineral content of the bone declined (Smith and Kiebzak, 1994). Despite this mineral loss, the present study demonstrates that uranium levels continue to accumulate in bone. A difference in growth patterns of skull and tibia was not evident from the time course of uranium accumulation. Previous studies have shown that uranium can displace calcium in bone matrix (Arsenault and Hunziker, 1988; Neuman *et al.*, 1949). In addition to bone, teeth and lower jaw contained high levels of uranium when measured 18 months after DU pellet implantation. It is possible that uranium is replacing calcium here, as well as in the tibia and skull.

The kidney is considered to be a primary site for uranium toxicity (Diamond, 1989; Diamond *et al.*, 1989; Kocher, 1989; Leggett, 1989). In the implanted rats, levels of uranium in the kidney increased through the first 6 months. Uranium levels at 12 and 18 months were no greater than the 6-month levels at all exposure doses. As previously demonstrated, uranium was

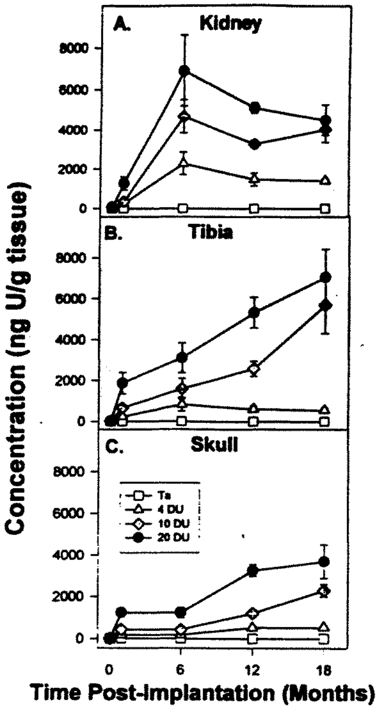

FIG. 6. Uranium concentration in kidney (A), tibia (B), and skull (C) plotted as a function of time after implantation. Time points were 1 day, 1, 6, 12, and 18 months. Each point is mean ± SEM.

excreted in the urine. Urine uranium concentration showed an irregular pattern with time. Eighteen months after implantation, the concentration was reduced compared to that found at 12 months. Analysis of the urine volume (data not shown) suggested age-dependent changes. Reassessment of the uranium excreted during a 24-h period revealed that, like the kidney uranium levels, the 24-h excreted uranium reached a maximum at 6 months. These levels were maintained at the later time points.

In previous studies, liver was a large pool for the accumulation of uranium (e.g., see Leggett, 1994). In the present study, levels in spleen were at least as high if not higher than those in liver. This may reflect differences in the route of uranium exposure (i.e., muscle-embedded fragments). Little uranium was measured in the serum, which would limit the uranium passing through the liver. Uranium distributed locally through the muscle and was found in the lymph nodes. It is possible that the uranium was scavenged by macrophages and transported through the lymph to the spleen. The macrophage is known to phagocytize uranium and to participate in clearing the lung of particles after inhalation exposure (Andre *et al.*, 1989; Tasat and de Rey, 1987; Batchelor *et al.*, 1982). This conclusion is supported by a chronic inhalation study in which the lung and the tracheobronchial lymph nodes were found to be the primary reservoirs of uranium in monkey, dog, and rat (Leach *et al.*, 1970; 1973). In the lymphoid tissue of the dogs and monkeys exposed for periods of 12 months or longer, black uranium pigment was associated with macrophages within the lymph tissue. On occasion, necrosis of the lymphoid tissue was observed (Leach *et al.*, 1970). Impaired immune function resulting from the chronic accumulation of uranium in the lymphatic system as well as in bones and spleen might be a possible consequence of prolonged exposure to DU fragments.

Distribution of uranium to brain from embedded DU pellets was unexpected. Six months after implantation, a dose-dependent increase of uranium was observed in the homogenized hemisphere of the rat brain. The 12-month sample used for analysis consisted only of sensory motor cortex, because some of the neural tissue was used for other purposes. The measured levels in this cortical region were much smaller than those of the entire hemisphere at 6 months. This suggested the possibility of regional distribution of uranium. At 18 months, different regions of the brain showed different levels of uranium. As with other heavy metals (Butterworth *et al.*, 1978; Cholewa *et al.*, 1986; Ono *et al.*, 1997; Rios *et al.*, 1989; Ross *et al.*, 1996), the uranium was not uniformly distributed throughout the brain. The neurotoxicity associated with exposure to other heavy metals (e.g., lead and mercury) raises concerns about the neurophysiological and behavioral consequences of uranium accumulation in the brain with chronic exposure to DU fragments.

At 18 months, we measured a dose-dependent increase of uranium in the testicles. Studies to date suggest the possibility that chronic uranium exposure in males can affect reproduction (Llobet *et al.*, 1991; Malenchenko *et al.*, 1978; Muller *et al.*, 1967). Male uranium miners were found to have more female offspring than predicted, suggesting alterations in sperm (Muller *et al.*, 1967). Male mice treated for 64 days with up to 80 mg/kg/day uranyl acetate in the drinking water showed a decrease in the rate of impregnation of untreated females (Llobet *et al.*, 1991). However, these effects were not dose-dependent and there was no evidence of impaired spermato-

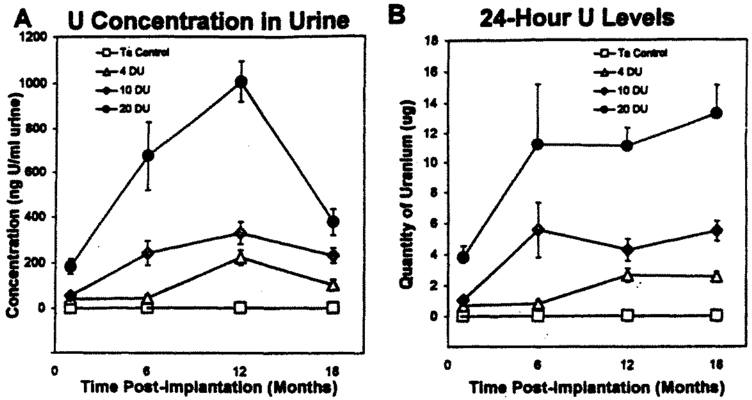

FIG. 7. Uranium content of urine in implanted rats. (A) Uranium concentration in urine plotted as a function of time after implantation. (B) Total content of uranium in the urine excreted during a 24-h period plotted as a function of time after implantation. Time points range from 1 to 18 months. No data were collected for the 1 day time point. Each point is mean ± SEM.

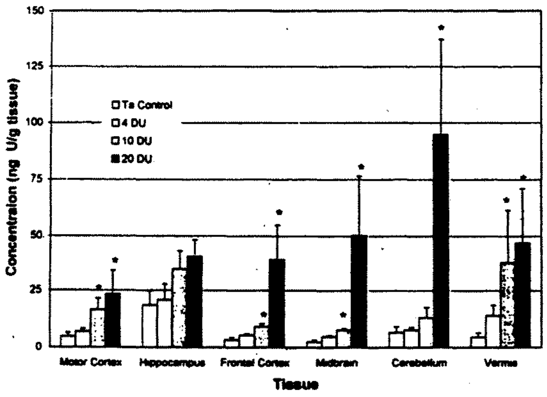

FIG. 8. Uranium concentration of brain areas measured 18 months after implantation of pellets. Bars represent mean ± SEM. *N*, 8–14. *Indicates significantly different from tantalum controls.

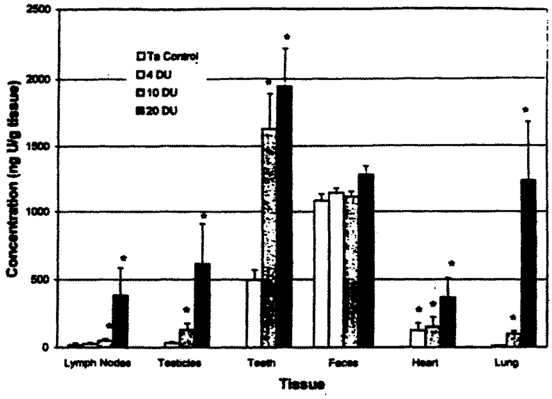

FIG. 9. Uranium concentration of additional samples measured 18 months after implantation of pellets. All measures are normalized to wet weight of sample. Bars represent mean ± SEM. *N*. 10–16. *indicates significantly different from tantalum controls.

genesis. In rats, a dose of 0.07 mg/kg/day uranyl nitrate hexahydrate for 16 weeks resulted in decreased testes weight, testicular lesions, and necrosis of spermatocytes and spermatogonia (Malenchenko *et al.*, 1978). In an early study on rats, a chronic diet of uranyl nitrate hexahydrate for 12 months resulted in severe degeneration in the testes and depletion of germ cells (Maynard *et al.*, 1953).

High concentrations of uranium were found in the feces of rats in all experimental groups, but no dose-dependence was observed. These levels may reflect the ingestion of substantial amounts of natural uranium found in the water and food. Despite this intake, uranium levels in the organs of control animals were minimal suggesting that the ingested metal contributes little to the uranium load. Previous studies have demonstrated that the ingestion of uranium results in only 0.5–3.0% absorption through the gastrointestinal tract (Leggett and Harrison, 1995).

In summary, following implantation of rats with DU pellets, kidney and bone are the primary reservoirs for uranium redistributed from intramuscularly-embedded fragments. Uranium was excreted in the urine throughout the 18 months of the study. The accumulations in brain, lymph nodes, and testicles suggest the potential for unanticipated physiological consequences of exposure to uranium through this route.

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Transformation of Human Osteoblast Cells to the Tumorigenic Phenotype by Depleted Uranium-Uranyl Chloride

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Depleted uranium (DU) is a dense heavy metal used primarily in military applications. Although the health effects of occupational uranium exposure are well known, limited data exist regarding the long-term health effects of internalized DU in humans. We established an *in vitro* cellular model to study DU exposure. Microdosimetric assessment, determined using a Monte Carlo computer simulation based on measured intracellular and extracellular uranium levels, showed that few (0.0014%) cell nuclei were hit by alpha particles. We report the ability of DU-uranyl chloride to transform immortalized human osteoblastic cells (HOS) to the tumorigenic phenotype. DU-uranyl chloride-transformants are characterized by anchorage-independent growth, tumor formation in nude mice, expression of high levels of the k-*ras* oncogene, reduced production of the Rb tumor-suppressor protein, and elevated levels of sister chromatid exchanges per cell. DU-uranyl chloride treatment resulted in a 9.6 (± 2.8)-fold increase in transformation frequency compared to untreated cells. In comparison, nickel sulfate resulted in a 7.1 (± 2.1)-fold increase in transformation frequency. This is the first report showing that a DU compound caused human cell transformation to the neoplastic phenotype. Although additional studies are needed to determine if protracted DU exposure produces tumors *in vivo*, the implication from these *in vitro* results is that the risk of cancer induction from internalized DU exposure may be comparable to other biologically reactive and carcinogenic heavy-metal compounds (e.g., nickel).

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Several U.S. military personnel participating in Operation Desert Storm were wounded in friendly fire accidents and have retained large fragments (approximately 2–20 mm) of depleted uranium (DU) in their bodies. DU, used in military munitions in the United States, was shown to be an effective material in kinetic energy penetrators in the 1991 Persian Gulf War. Chemically similar to natural uranium (*1*), DU is a low specific-activity heavy metal, with a density approximately 1.7 times that of lead (19 g/cm^3 versus 11.35 g/cm^3). DU differs from natural uranium in that it has been depleted of ^{235}U and ^{234}U. As a result, the specific activity of DU is significantly lower than that of natural uranium (0.4 µCi/g versus 0.7 µCi/g, respectively) (*2*).

Assessment of the carcinogenic risks from DU is complicated by the dual toxicity of uranium (i.e., chemical as well as radiological). Epidemiological studies have linked uranium mining and milling to human carcinogenesis (*1*), but there are no published studies to permit an accurate assessment of risks for carcinogenesis from DU. The radiological health risks (external exposure) to personnel handling DU munitions were evaluated and determined to be within allowed occupational exposure limits (*1,2*); the health risks from internalized DU, however, are more difficult to estimate due to the physical and chemical properties of the internalized DU (*3*). The chemical toxicity of acute, short-term exposures to uranium, primarily manifested as renal, pulmonary, and developmental toxicity, has clearly been demonstrated in animals and humans (*4*). In contrast, the long-term health risks associated with internal chronic exposure are not as clearly defined (*1*). In view of carcinogenesis risk estimates and medical management questions relevant to current and possible future incidents of DU internalization, an examination of molecular and cellular effects, including the potential transforming ability of DU, are necessary to understanding the potential carcinogenic effects of DU. The use of cell culture models to investigate potential or known carcinogens can provide important insights into the cellular and molecular mechanisms of carcinogenesis.

In spite of epidemiological studies that suggest that uranium is a carcinogen (*1*), there is no evidence that uranium of any type (depleted, naturally occurring, or enriched) can transform human cells to the tumorigenic phenotype (*1*). Furthermore, the *in vitro* transformation assay has not previously been used to study the transforming ability of any uranium compounds (depleted, naturally occurring, or enriched uranium). This assay has been widely used in conjunction with metal salts to assess the potential carcinogenicity of metal compounds (e.g., nickel, chromium, lead) (*5–8*) and therefore we chose to use this assay to assess the potential carcinogenicity of DU. Investigations using metal salts have also been able to clarify the contradictions observed in some animal and human carcinogenicity studies (*8*). The HOS TE85 cell line, an immortalized, nontumorigenic osteoblastlike cell line, has been successfully used to demonstrate the transformation of nontumorigenic human cells to the tumorigenic phenotype by metals (*7,8*) and chemical (*9*) carcinogens. We chose the DU compound DU-UO$_2$Cl$_2$, which readily forms the UO$_2^{2+}$ cation in solution, as the depleted uranium metal salt to be tested. We used nickel sulfate and lead acetate, which have previously been shown to transform cells *in vitro*, for comparison.

Our data demonstrate for the first time that a DU compound can transform human cells to the tumorigenic phenotype, similar to results observed with some nickel compounds (*6–8*). Isolated DU transformants form anchorage-independent colonies, produce tumors when injected into athymic mice, express the k-*ras* oncogene, and have an altered phosphorylation of the Rb tumor-suppressor protein. Based on these *in vitro* results, the carcinogenic potential of internalized DU remains a concern and warrants additional studies with experimental animals.

Materials and Methods

Cell lines and culture. Human osteosarcoma cell lines HOS (TE85, clone F-5) were obtained from the American Type Culture Collection (Rockville, MD). Cell cultures

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were propagated in Dulbecco's modified Eagle medium (D-MEM) supplemented with 2 mM glutamine, 10% heat-inactivated fetal calf serum (Gibco Laboratories, Grand Island, NY), 100 U/ml penicillin, and 100 μg/ml streptomycin (Sigma, St. Louis, MO). Cells were tested for mycoplasma by MycoTect Kit (Sigma), and only cells negative for mycoplasma were used.

Transformation and cell growth studies. DU-UO_2Cl_2 was initially dissolved in sterile water (freely soluble in water). Based on previous unpublished work with uranyl compounds which demonstrated that micromolar concentrations are relatively nontoxic to cultured cells, we chose a concentration of 10 μM for transformation and cell growth studies. Metal salts were added to sterile water and then filtered to prepare concentrated stock solutions that were used throughout these studies. Dilutions from concentrated stock solutions were dissolved into complete medium immediately before exposure. Briefly, 1 × 10^6 cells were treated with DU-UO_2Cl_2 (10–250 μM), $NiSO_4$ (10 μM), or lead acetate (10 μM) for 24 hr in complete medium. After treatment, cells were rinsed, trypsinized, counted, and seeded in 100-mm tissue culture dishes at a density calculated to yield about 125–225 surviving cells per dish. Approximately 150 replicate dishes were seeded for each treatment group. The cultures were incubated for 5 weeks with weekly changes of nutrient medium.

For quantitative transformation assessment, at the end of the incubation period, cells were fixed, stained, and examined for the appearance of transformed foci (*10*). We assayed transformed foci using the criteria developed by Reznikoff et al. (*10*) and the IARC/NCI/EPA Working Group (*11*). The working group report indicated that because of the continuum of focus morphology, some foci can be intermediate (I/II, II/III) in character, and these foci should be scored conservatively and assigned to the category of lower aggressive behavior. With the HOS cells it was easy to distinguish between a type I and a type II foci, but somewhat difficult to differentiate between type II and type III foci. Therefore, in our experiments, only type II and type II/type III foci were scored as transformants. In Table 1, number of dishes with foci equals number of foci of type II plus type III. Details of the transformation frequency calculations and the standard error were described elsewhere (*12*) but are outlined below. Transformed foci are not contact inhibited and may be dislodged during refeeding forming satellite colonies. To avoid this source of errors, the average number of transformed foci per dish, λ, was computed from the proportion of dishes free of transformed colonies, *f*, i.e., λ = -ln *f*. To determine the transformation frequency, the following formula was used:

Transformation frequency =
λ/number of surviving cells per dish

This calculation has been widely used in radiation-induced neoplastic transformation studies to quantitatively compare transformation frequencies. The transformation data are presented from three independent experiments unless otherwise noted.

We determined cell survival fraction (SF) using the conventional clonogenic assay (*9*). Cytotoxicity and survival assays were conducted in parallel with each transformation assay as described (*9*). Several transformed foci were picked by cloning cylinders and expanded by mass culture to establish transformed clonal lines. The transformation dose–response curve was determined as indicated above, except that increasing concentrations of DU-UO_2Cl_2 were used. We selected the optimal dose level for transformation following a preliminary toxicity test based upon colony-forming efficiency. The high dose selected resulted in >90% toxicity, and the low dose selected resulted in minimal toxicity. Three intermediate doses were also selected.

To determine saturation densities, cells were plated at 1 × 10^5 cells per 100-mm diameter plate in complete growth medium and monitored for growth as previously described (*9*). For the soft-agar clonability assay, cells were plated at a density of 2 × 10^3 cells per well in a six-well plate sandwiched by 1-ml bottom agar (0.6%) and 1-ml top agar (0.3%). Cells were fed weekly by adding a new layer of top agar. Colonies >0.5-mm diameter were scored using a microscope after 2 weeks. The plating efficiency value for each clone represents the mean number of colonies scored from three wells. For both saturation density determination and plating efficiency in soft agar, data represent three independent experiments.

Tumorigenicity assay. Experiments were performed with 4- to 5-week-old female athymic mice (Division of Cancer Treatment, NCI Animal Program, Frederick Cancer Research Facility). For this assay, 5 × 10^6 or 1 × 10^6 cells in a 0.2-ml sterile suspension were injected subcutaneously in the right scapula. Animals were then observed for tumor growth at the sites of injection. The appearance of tumor growth was monitored daily for 180 days. Tumor area was measured using a caliper measurement of two perpendicular diameters. When tumors were >100 mm^2, the animal was euthanized.

Sister chromatid analysis. The yield of sister chromatid exchange (SCE) per cell in control and DU-UO_2^{2+} exposed cells following a 24-hr exposure was assessed in 100 second mitotic metaphase spreads (48-hr culture) using the conventional fluorescence-plus-Giemsa harlequin staining protocol (*13*). The SCE yield in selected transformed clones was similarly determined.

Microdosimetry. The term "specific energy" is used rather than "dose" because dose refers to macroscopic averages, whereas specific energy is a microdosimetric equivalent (i.e., dose to a single cell). We applied microdosimetric methods using Monte Carlo computer simulations (*14*). The code

Table 1. Morphological transformation of human osteoblastlike cells by depleted uranium-uranyl chloride: comparison to nickel sulfate and lead acetate

Metal	Concentration (μM)	Surviving fraction	Survivors/ dish	No. of dishes	No. dishes with type II or type II/III foci	No. of dishes without foci	λ	Transformation frequency per survivor[a] × 10^{-4}
Experiment 1								
None	0	1.0	201	155	13	142	0.084	4.2 ± 1.1
DU-uranyl chloride	10	0.95	122	165	64	101	0.491	40.2 ± 5.0
Nickel sulfate	10	0.97	116	150	40	110	0.312	26.9 ± 3.4
Lead acetate	10	0.99	119	150	31	119	0.237	19.9 ± 2.3
Experiment 2								
None	0	0.99	180	141	12	129	0.088	4.9 ± 1.1
DU-uranyl chloride	10	0.96	101	110	40	70	0.448	44.4 ± 5.1
Nickel sulfate	10	0.97	110	122	35	87	0.337	30.7 ± 3.7
Lead acetate	10	0.97	107	127	25	102	0.219	20.5 ± 2.9
Experiment 3								
None	0	0.99	149	140	9	131	0.066	4.24 ± 1.0
DU-uranyl chloride	10	0.96	115	120	47	73	0.490	42.6 ± 5.2
Nickel sulfate	10	0.98	115	120	32	88	0.329	27.5 ± 2.5
Lead acetate	10	0.96	114	120	26	94	0.251	22.3 ± 2.7

[a] The transformation data illustrated are from three independent experiments involving approximately 400 plates/metal. Transformed foci were assessed according to the criteria of Reznikoff et al. (10) with type II and type III foci being scored as transformants. Therefore, the "dishes with foci" values shown include only those colonies that were morphologically consistent with either type II or type III foci as described by Reznikoff et al. The average number of transformed foci per dish was computed from the proportion of dishes free of transformed colonies, *f*, by λ = -ln *f*. Transformation frequency = λ/number of surviving cells per dish (12).

was modified to include the following parameters in the calculations: cell location and size, distribution of uranium (intracellular and extracellular), specific activity, alpha particle energies, media volume, and molar concentration of uranyl chloride. We calculated the trajectory of each alpha particle using vector analysis to determine whether it would hit a nucleus. For those that scored a hit, the amount of energy transferred to the nucleus was calculated by determining the residual energy retained by the alpha particle as it penetrated the nucleus and integrating the fractional energy loss under the Bragg curve from the entry point to the exit point.

Kinetic phosphorescence analysis of uranium. Kinetic phosphorimetry measurements were performed using a kinetic phosphorescence analyzer (KPA) (*15*). To determine the amount of uranium per cell following a 24-hr treatment with 10 µM DU-UO_2^{2+}, cells were treated and then rinsed in phosphate-buffered saline. Using previously described procedures, cells were lysed and fractionated into subcellular fractions. Lysates were analyzed for uranium content as described (*15*).

Northern blot analysis and DNA probes. Cytoplasmic RNA was extracted from exponentially growing cells and separated by electrophoresis in 1% agarose-formaldehyde gels. RNA preparation and blotting onto nytran filters, hybridization with radiolabeled DNA probes, and autoradiography were as previously described (*9*). The *ras* probe, a Sac I 2.9 kb fragment of the human k-*ras* gene, was obtained from Oncor (Gaithersburg, MD). We prepared ^{32}P-labeled DNA probes using a random primed DNA labeling kit (Boehringer Mannheim, Germany).

Metabolic labeling and immunoprecipitation of pRb. Exponentially growing cells [1 × 10^6 per T75-cm^2 flask (Costar)] were radiolabeled with ^{32}P-orthophosphate (250 µCi) for 24 hr and lysed in buffer (1% Triton X-100, 0.05 M Tris-HCl, pH 8.0, 5 mM $MgCl_2$, and 0.1 M NaCl). Lysates were incubated with polyclonal anti-pRb antibody-agarose conjugates (Oncogene Science, NY) for 2 hr at 4°C. Processing of immunoprecipitates was as previously described (*9*). The proteins were resolved on 7.5% polyacrylamide gels and analyzed by autoradiography.

Results

Characterization of model system: cytotoxicity, SCE induction, and microdosimetry. We initially assessed the effect of DU-UO_2Cl_2 exposure on cell growth and survival, cytogenetic damage, and microdosimetry to characterize our cell model system. No effect on cell survival (surviving fraction, SF, 0.96 ± 0.04) was observed using the standard colony formation assay (*9*) following a 24-hr exposure to DU-UO_2^{2+} (10 µM). Growth rate analysis by cell enumeration and thymidine incorporation into DNA (*9*) similarly revealed that the DU-UO_2^{2+} treatment did not affect cell growth during the 24-hr exposure (inhibitory concentration, IC_{50}, 45 µM). Therefore, to preclude excessive cell killing due to heavy metal toxicity, the nontoxic, noncytostatic concentration chosen for the transformation experiment was 10 µM (24-hr exposure). The colony formation assay was also used to assess the cytotoxicity of $NiSO_4$ and lead acetate. Similarly, nontoxic concentrations of $NiSO_4$ and lead acetate were chosen (20 µM, SF = 0.94; 20 µM, SF = 0.095, respectively).

Cytogenetic analysis of the acute effect of the 24-hr exposure to 10 µM DU-UO_2^{2+} was assessed in the *in vitro* HOS model system using the SCE assay. As seen in Figure 1A, this acute DU exposure caused an approximately twofold increase in SCE induction (untreated: 8.3 SCE/cell; DU-UO_2^{2+}: 17.9 SCE/cell). In comparison, lead acetate treatment did not result in a significant increase in SCEs, while nickel did induce a small but significant increase

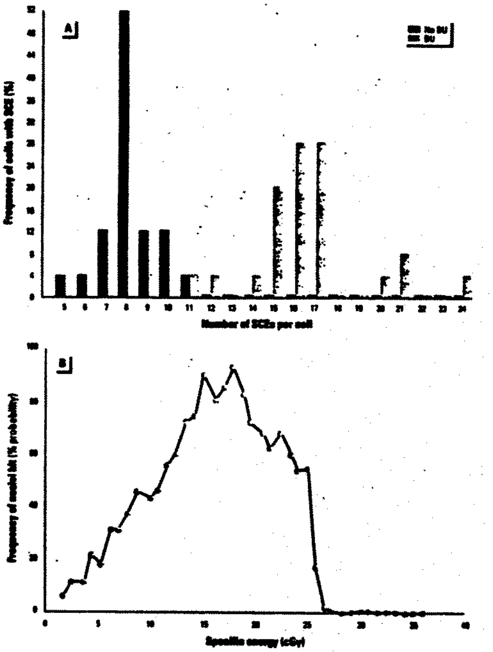

Figure 1. Characterization of an *in vitro* HOS cellular model to assess DU-UO_2^{2+} exposure. The effect of DU-UO_2^{2+} exposure (24 hr, 10 µM) on sister chromatid exchange (SCE) induction and a microdosimetric assessment of the fraction of cell nuclei exposed to DU-induced alpha particles was determined. (A) Frequency distribution of SCE formation, measured as described in Materials and Methods. (B) Frequency distribution of nuclei hit by an alpha particle; microdosimetric assessment was determined using a Monte Carlo computer simulation based on measured levels of intracellular and extracellular uranium as described in the methods. F(hit) = 1.4 × 10^{-3}%.

in SCEs (lead acetate, 20 µM: 8.9 SCE/cell; $NiSO_4$, 20 µM: 11.4 SCE/cell).

Using a standard uranium analysis technique, KPA (*15*), the amount of uranium per cell following a 24-hr treatment with 10 µM DU-UO_2^{2+} was determined to be 1.8 (± 0.15) × 10^{-6} ng/cell with the average intercellular concentration being 2 µM.

To examine the stochastic fluctuations of alpha particle hits and energy deposition in the cell nuclei, microdosimetric methods using Monte Carlo computer simulations were applied (Figure 1B). The computer code, designed by Humm (*14*) to predict cell inactivation by internal alpha emitters, was modified to correspond to the experimental conditions as described in Materials and Methods. The trajectory of each alpha particle was calculated using vector analysis to determine whether it would hit a nucleus. The energy transferred to the nucleus was calculated by determining the residual energy retained by the alpha particle as it penetrated the nucleus. The calculations determined that only 0.0014% of the nuclei were hit and that the mean specific energy received by those cells was approximately 17 cGy. The results, plotted as a frequency distribution, are shown in Figure 1B.

Transformation of HOS cells by DU-UO_2^{2+}: comparison to $NiSO_4$ and lead acetate. To assess for morphological cell transformation, the standard focus formation assay described by Reznikoff et al. (*10*) and Hill et al. (*12*) was used. After exposure to DU-UO_2^{2+}, a morphological change in HOS cells was observed (Fig. 2). HOS cells exhibit a flat epithelial-like morphology and appear to grow in a monolayer (Fig. 2A). In contrast, after treatment with DU-UO_2^{2+} and weekly changes of nutrient medium for 5 weeks, diffuse type II foci appeared (Fig. 2B). The morphology of the focus is distinctly different from the surrounding cells (Fig. 2B), although the focus does not exhibit the "piled up" appearance seen in transformed C3H10$T_{1/2}$ cells (*10*). Table 1 shows measured values for the transformation frequencies (normalized per surviving cell) for HOS cells treated with DU-UO_2^{2+} (10 µM). The transforming abilities of $NiSO_4$ and lead acetate have been shown previously (*8,16*) but are repeated here to allow for a quantitative comparison to the DU compound. The data demonstrate that treatment with DU-UO_2^{2+} resulted in a transformation frequency of 40.2 × 10^{-4}, which is a 9.6 (± 2.8)-fold increase in transformation compared to untreated HOS cells. In comparison, the transformation frequencies induced by $NiSO_4$ and lead acetate treatment resulted in a 7.1 (± 2.1)- and 5.0 (± 1.6)-fold increase in transformation frequency compared to untreated cells.

Several foci were picked by cloning cylinders and expanded by mass culture to establish transformed clonal lines. Four DU-transformed clones (designated as DU1, DU2, DU3, and DU4) were selected for tumorigenic and growth analysis; a $NiSO_4$- and a lead acetate-transformed clone were also selected for similar analyses. A spontaneous focus arising from untreated HOS cells was also selected and expanded.

Biological characterization of the transformed phenotype. Alteration in growth control is critical to neoplastic transformation, and therefore the metal-transformed clones were further characterized by quantitative differences in growth properties associated with the neoplastic phenotype (e.g, saturation density and soft colony-forming efficiency). Additionally, to determine if cells transformed *in vitro* were capable of producing tumors in immunosuppressed mice, the nude mouse assay was used to test the tumorigenicity of DU-transformed cells (*9,10*). From Table 2 it can be seen that the saturation densities of DU-transformed cells were three to four times higher than that of the parental HOS cells. Data obtained for $NiSO_4$- and lead acetate-transformed cells were similar to that for DU. A comparison of the transformants' ability to grow in soft agar reveals that the DU transformants generated colonies within 1 week, with colony-forming efficiencies of 32–51%; the plating efficiencies were somewhat lower for $NiSO_4$- or lead acetate-transformed cells. Parental HOS cells did not form colonies in soft agar (Table 2). We have previously shown that MNNG and EJ-*ras* transformants formed soft agar colonies whose size and frequency were comparable to those observed with these DU transformants (*9*).

Inoculation of athymic nude mice with DU transformants resulted in the development of animal tumors within 4 weeks. All of the DU transformed cell lines analyzed for tumorigenicity appeared to be highly tumorigenic because as few as 1 million DU-transformed cells developed progressively growing tumors within 4 weeks. Similarly, nude mice inoculated with $NiSO_4$ or lead acetate transformants also formed tumors (Table 2). In contrast, parental HOS cells injected into nude mice did not form any tumors during a period of 6 months after cell inoculation. Histological analysis indicates that the tumors formed by DU-transformed cells resemble a carcinoma characterized by an undifferentiated, sheetlike growth. Tumors were reestablished in tissue culture and confirmed as human; their resemblance to

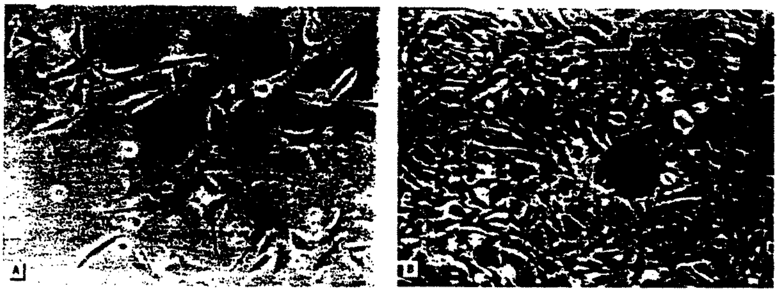

Figure 2. Morphology of HOS cells and focus formation after DU-UO_2^{2+} exposure. (A) Morphology of control HOS cells; phase contrast micrograph, (×40). (B) Focus formation in HOS cell; the edge of a focus of transformed cells is seen against a background of parental HOS cells with normal morphology (×40).

Table 2. Biological properties of human osteoblastlike cells transformed by depleted uranium-uranyl chloride, nickel sulfate, or lead acetate

Metal/clone designation	Saturation density (1×10^6 cells)[a]	Plating efficiency in soft agar (%)[a]	Nude mice with tumors[b]		SCE/cell (mean ± SE)
			5×10^6 cells	1×10^6 cells	
None/control	2.6	0	0/12	0/20	6.50 ± 0.06
DU-UO_2Cl_2/DU-1	7.9	51	8/10	8/12	18.53 ± 1.04
DU-UO_2Cl_2/DU-2	6.7	32	3/6	2/6	20.11 ± 2.02
DU-UO_2Cl_2/DU-3	8.2	47	4/6	2/6	21.01 ± 2.12
DU-UO_2Cl_2/DU-4	7.8	44	3/6	3/6	18.23 ± 1.00
$NiSO_4$/nickel-1	7.2	29	4/12	2/6	12.29 ± 1.19
$PbAc_2$/lead-1	6.5	19	1/10	ND	11.27 ± 1.02

Abbreviations: SCE, sister chromatid exchange; ND, not determined.

[a] Data represent three independent and identical experiments.

[b] Tumor latency was approximately 4 weeks.

the cells of origin was determined by karyological analysis (data not shown).

In contrast to the data presented in Figure 1A which demonstrate "acute" SCE elevation by DU, "persistent" cytogenetic changes, manifested as effects on the levels of SCEs per cell, were measured in the four transformed clones selected. Cytogenetic analysis of the DU-uranyl chloride-transformed clones revealed that all of the clones had a 2.14 (± 0.22)- to 3.47 (± 0.31)-fold higher level of SCE per cell compared to parental HOS cells (Table 2). The untreated, spontaneous HOS transformants did not exhibit a significant increase in SCE induction [1.07 (± 0.22)-fold increase] compared to parental HOS cells.

ras and pRb analysis in DU transformants. Neoplastic cell transformation is hypothesized to result from a multistep process involving activation of oncogenes and inactivation of tumor-suppressor genes (*17*). Both metal- and radiation-induced neoplastic transformation have been shown to be associated with genetic alterations in specific oncogenes and tumor-suppressor proteins, such as *ras* and pRb (*6,9*). Therefore, possible molecular changes in *ras* and pRb associated with DU-induced transformation were studied using the four DU-transformed cell lines. Northern blot analysis, shown in Figure 3A, revealed high levels of *ras* mRNA in each of the four DU clones tested. In contrast, the *ras* mRNA levels were undetectable in parental HOS. The amount of actin mRNA was similar in all clones tested (not shown). Heavy-metal–induced transformation (e.g., nickel) has been shown to cause a loss of phosphorylation of the retinoblastoma protein. We therefore used anti-pRb1 monoclonal antibodies to compare the phosphorylation of the pRb of the different DU-transformed cell lines to the parental cells by assessing the quantity of radioactive phosphate incorporated into the Rb protein. Each of the DU clones examined exhibited significantly lower amounts of ^{32}P incorporated into pRb relative to the parental HOS cells (Fig. 3B). The lack of phosphorylation of pRb could be a result of less protein available to phosphorylate, abnormalities of the cyclin-associated kinase systems responsible for phosphorylation of pRb, a mutation in the *Rb* gene, or a combination of these possibilities. Previous observations with nickel-transformed HOS cells demonstrated a mutation was induced in these transformants that affected the ability of the Rb protein to be phosphorylated and function normally (*6*).

Dose response: morphological transformation by UO_2Cl_2. To further evaluate the ability of DU-uranyl chloride to morphologically transform cells, increasing concentrations of DU were tested for their transforming ability. The results in Table 3 show that there is a DU concentration-dependent increase in transformation frequency. A transformed clone was selected from each concentration tested and expanded to mass culture. An examination of the selected transformants' ability to grow in soft agar reveals that the DU transformants generated large colonies (>0.5 mm) within 1 week with colony-forming efficiencies ranging from 33% to 53%. Inoculation of athymic nude mice with these DU transformants resulted in the development of tumors within 4 weeks.

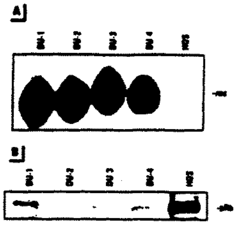

Figure 3. Analysis of K-*ras* expression and Rb protein production in parental HOS and DU-UO_2Cl_2-transformed clones. (A) *ras* Oncogene expression; Northern blot analysis of cytoplasmic RNA (20 μg) from DU-1, DU-2, DU-3, DU-4, and HOS. Hybridization was with a ^{32}P-labeled K-*ras* probe (*ras* transcripts were undetectable in HOS cells). Hybridization with ^{32}P-labeled actin was used to indicate that the relative amounts of RNA loaded into each lane were the same (data not shown). (B) Rb protein level; immunoprecipitation analysis of Rb protein from DU-1, DU-2, DU-3, DU-4, and HOS. Anti-pRb1 was used to capture cellular Rb protein containing ^{32}P.

Discussion

Our studies demonstrate for the first time that the malignant transformation of immortalized human cells can be achieved by exposure to the depleted uranium compound UO_2Cl_2. These transformants showed morphological changes and anchorage-independent growth in soft agar, induced tumors when transplanted into nude mice, and exhibited alterations in *ras* oncogene expression and pRb phosphorylation. Based on equivalent concentrations and metal toxicities, the magnitude of this DU-UO_2^{2+} transformation is comparable to that seen here for $NiSO_4$ and approximately twofold higher than that observed for lead acetate, both known transforming metals (*8,16*). Furthermore, DU-UO_2^{2+} caused a dose-dependent frequency in the transformation of HOS cells. To our knowledge, this is the

Table 3. Transformation potential of DU-uranyl chloride: dose response

Treatment	Concentration (μM)	Surviving fraction	Transformation frequency per survivor[a] × 10^{-4}	Plating efficiency in soft agar (%)	Nude mice with tumors[b] (5×10^6 cells injected)
Control	0	1.0	4.2 ± 1.1	0	0/12
DU-UO_2Cl_2	10	0.95	40.2 ± 5.0	46	8/10
	25	0.84	51.1 ± 7.0	47	3/6
	50	0.25	108.9 ± 12.0	53	5/6
	100	0.10	125.6 ± 15.0	44	4/6
	250	0.02	90.4 ± 10.0	33	4/6

[a] The transformation data were analyzed similar to that in Table 1. Data are the mean ± standard error from three independent experiments involving approximately 500 dishes/treatment. The average number of transformed foci per dish was computed from the proportion of dishes free of transformed colonies, *f*, by λ = −ln *f*. Transformation frequency = λ/number of surviving cells per dish.

[b] Tumor latency was approximately 4 weeks.

first report of human cell transformation to the tumorigenic phenotype by any uranium compound of any specific activity (depleted, naturally occurring, or enriched). Although specific heavy metals and alpha particle radiation have been shown individually to transform cultured cells and it is not unexpected that DU could transform cells, these results are important to the understanding of the mechanism of the potential carcinogenicity of DU.

Second, these studies confirm previous results that HOS cells can be used to assess morphological transformation (*8*). Morphological transformation studies have primarily involved rodent cell lines such as C3H and 10T1/2, and to our knowledge this is only the second time that HOS cells have been used for an assessment of morphological transformation. These studies with DU demonstrate another step in understanding the transformation process of HOS cells.

The precise mechanism(s) by which DU-UO_2^{2+} induces transformation in HOS cells is unknown. The possibility that alterations in specific oncogenes (e.g., *ras*) and/or inactivation of tumor-suppressor genes (e.g., *p53*, *Rb*) are involved in the conversion of these cells to the malignant phenotype has been considered. HOS cells contain a mutation at codon 156 resulting in a mutated form of p53 protein, which is believed to be partially responsible for their immortalization (*18*). As neoplastic conversion is postulated to result from a multistep process involving cell immortalization and gene alterations (*17,19*), the transformation of immortalized HOS cells by DU-UO_2^{2+} to the malignant phenotype may involve other cellular oncogenes in this process. Our data demonstrate that the *ras* oncogene was activated in the transformation process induced by DU exposure. The *ras* oncogenes have been implicated in both chemically and radiation-induced animal tumors (*20–22*) and spontaneous human tumors (*23*) and may play a prominent role in the multistage conversion process.

Because others have demonstrated that nickel-induced morphological transformation of HOS cells can affect the *Rb* gene and its encoded protein (*6*), we examined the status of this tumor-suppressor protein in our DU-transformed clones. Changes in the phosphorylation of the *Rb* tumor-suppressor gene-encoded protein in the DU-transformed clones were observed. The *Rb* gene has been shown to be mutated or inactivated in a broad spectrum of human tumors, including retinoblastoma, osteosarcoma, lung cancer, and breast cancer, and appears to be important in human carcinogenesis; furthermore, the inactivation of the *Rb* may be involved in the molecular mechanism of carcinogenesis of human osteoblasts (*24*). Recent *in vitro* studies with nickel-transformed HOS cells suggested that nickel exposure induced a mutation in the *Rb* gene that resulted in an alteration in the function of the Rb protein (*6*). It appears from our data that transformation of HOS cells by DU-UO_2^{2+} results from a conversion process which also involves activation of tumor-promoting gene(s) and/or alterations in tumor-suppressor proteins, including *ras*, *p53*, and *Rb*.

Without evidence that DU-UO_2^{2+} directly affects the DNA, we can only speculate about the mechanism(s) by which DU-UO_2^{2+} ultimately affects the *ras* gene and the Rb protein. The nature of this mechanism may involve direct damage to the DNA and to DNA repair processes. Transforming metals such as nickel can induce SCEs (*25*) and have been shown to directly damage DNA (*26*), whereas others such as lead acetate do not directly affect the genetic material and may induce transformation via an indirect mechanism such as changes in DNA conformation or enzymatic disturbances (*16*). An elevation in SCE levels has also been observed as the result of inhibition of DNA replication, rather than by direct damage of chromosomes (*25*). Our observation of an elevation in the level of SCE per cell, while consistent with these concepts, cannot distinguish between them. The mechanism of action at the genomic level for DU-induced transformation has not been determined and awaits further investigation; it is possible that DU induces transformation via mechanisms similar to those observed for nickel or lead, or by other by unknown mechanisms.

Elucidation of the mechanism by which DU transforms cells is further complicated by the concurrent exposure to both the chemical (heavy metal) component and the radiological (alpha particle) components from DU. The chemical toxicity of uranium, based on animal and epidemiology studies, is well known (*27*) and is believed to be responsible for cytogenetic damage observed in the lymphocytes from men occupationally exposed to insoluble uranium (*28*), but has not been linked to uranium carcinogenesis. However, our results provide evidence that the chemical/metal toxicity of DU plays a significant role in its ability to morphologically transform human cells. It is interesting to speculate that the observed chemical toxicity of DU-UO_2^{2+} may be attributed to the radiomimetic property of uranyl ions to act as a transition metal to produce free radicals via a Fenton-like reaction (*29*), similar to those chemical properties generally attributed to iron-II, copper-I, and recently demonstrated for plutonium by Claycamp and Luo (*30*). DNA is an effective chelator of metal ions, which suggest the possibility of a metal-mediated, site-specific free radical damage (*31*).

Increased lung cancer risks in uranium miners and uranium milling workers have been attributed to exposure to the alpha particle emitter radon and its daughter products (*1,32*). In our study with DU exposures *in vitro*, the biological effect from the radiological component may be significantly reduced since so few cells (0.0014%) are actually hit by alpha-particle emissions (1 alpha particle traversal/cell hit). Therefore, in our study, the defining question is whether the alpha particle dose distribution and its track could effectively produce a change in that target cell that would induce or promote morphological transformation. Preliminary data using an alpha particle microbeam have demonstrated that one alpha particle traversal of a cell is not enough to induce morphological transformation (*33*). Although these data from Miller's laboratory and our results argue for a negligible role for alpha radiation in the DU-UO_2^{2+}-induced transformation, low levels of exposure to alpha radiation have been shown to induce genetic changes (*34*) and chromosomal instability (*35*) in the progeny of alpha-irradiated cells. The involvement of transmitted genetic instability in the transformation process is not fully understood and cannot be ignored because it could possibly be involved in the DU-UO_2^{2+}-induced transformation. Whether by radiation or chemical mechanism, DU-UO_2^{2+} exposure is consistent with the generally accepted features associated with neoplastic transformation of cells by radiation or metal exposure including formation of sister chromatid exchanges (*31,36,37*) and genomic instability manifested as gene alterations (*6,36,38*).

In summary, we have used a model system of *in vitro* human osteoblast cells exposed for 24 hr to DU-uranyl chloride (10 µM), nickel sulfate (10 µM), or lead acetate (10 µM) to assess relative transforming potential of DU in an effort to better understand the potential health risks from long-term exposure to internalized DU. Despite the well-known low solubility of uranyl compounds, we found cellular uptake of uranium consistent with other transuranic compounds (*39*). As expected from the prompt chemical toxicity of heavy metal exposure, the levels of SCEs were elevated in DU-UO_2^{2+}-treated cells. Microdosimetry studies demonstrate that few ($<1.4 \times 10^{-3}$%) cells are actually hit by alpha particles emitted from DU. This argues for a negligible role for radiation effects from DU-UO_2^{2+} exposure. DU-UO_2^{2+} appears to be 1.34 (± 0.24)- and 1.91 (± 0.42)-fold more potent that nickel sulfate and lead acetate, respectively, in inducing an elevation in neoplastic cell transformation frequency *in vitro* at equivalent concentrations. Hence, DU-UO_2^{2+} appears to have transforming ability slightly greater than that of many other trace heavy metals, which also induce neoplastic cell transformation *in vitro*, as well as cause tumor formation in animals (*40*). While additional animal studies are needed to address the effect of protracted exposure and tumor induction *in vivo*, the implication from our model system study is that the risk of neoplastic induction from internalized DU exposure may be similar to other biologically reactive and carcinogenic heavy metal compounds such as lead and nickel.

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UT SOUTHWESTERN RESEARCHER FINDS GENETIC CAUSE FOR GULF WAR SYNDROME

DALLAS – June 16, 1999 – A genetic trait can predispose people to Gulf War syndrome, a new study has found.

In an article published in today's issue of *Toxicology and Applied Pharmacology*, a UT Southwestern Medical Center at Dallas researcher shows why some veterans of the Gulf War may have gotten ill from certain chemical exposures while others did not.

Dr. Robert Haley, UT Southwestern's chief of epidemiology, led the study with assistance from Dr. Bert La Du and Scott Billecke from the University of Michigan Medical School.

"One of the biggest questions about Gulf War syndrome has been why one person got sick when the person next to him didn't," Haley said. "That is one of the major puzzles that made many people think the symptoms were just due to stress.

"But now we know that there appears to be a genetic reason why some people got sick and others didn't, and this genetic difference links the illness to damage from certain chemicals."

Haley's study showed that people with a gene that causes them to produce high amounts of a particular enzyme did not get sick after exposure to certain chemicals in Operation Desert Storm, while others who produce low amounts of the same enzyme did get sick.

The culprit gene is the one that controls production of type Q paraoxonase, or PON-Q, an enzyme that allows the body to fight off chemical toxins by destroying them. This particular enzyme is highly specific for the chemical nerve agents sarin and soman as well as for the common pesticide diazinon.

In some people, the gene causes the body to produce high levels of PON-Q, allowing their bodies to fight off toxins like nerve gas. But in others the gene directs the production of low levels of PON-Q, meaning a person cannot fight off even low levels of these toxic chemicals well.

Blood levels of a genetically similar enzyme PON-R, which destroys other chemicals

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more effectively than nerve agents, were no different in the sick and well Gulf War veterans.

"In our earlier studies when we found strong statistical links between Gulf War syndrome and veterans' reports of exposure to combinations of chemicals like pesticides and low-level chemical nerve agents, we predicted it might be due to a PON-Q deficiency, and now that's what we have found," Haley said. "The sick veterans in our study have low PON-Q levels in their blood, and the well ones have high PON-Q levels.

"We have found a genetic marker that appears to explain what made many of these veterans sick."

In 1997, Haley and a group of other UT Southwestern researchers published a set of three scientific papers in *The Journal of the American Medical Association*, which concluded that some veterans suffer from brain damage caused by exposure to various combinations of chemicals during the Gulf War.

They linked three different neurological syndromes to the use of pesticide-containing flea collars, highly concentrated insect repellant and pyridostigmime bromide anti-nerve gas tablets, as well as exposure to low-level chemical nerve agents.

The current study examined the same group of men, members of the 24th Naval Mobile Construction Battalion, used in the 1997 studies. Because these studies were conducted in a single battalion of naval reservists, Haley and colleagues have planned a nationwide survey to see how strongly the new neurotoxicity syndromes are associated with low-level PON-Q enzyme levels in a random sample of Gulf War-era veterans.

Haley, who has been researching Gulf War syndrome since 1994, has published more than 100 scientific papers. He is an associate professor of internal medicine with a specialty in epidemiological research.

La Du, a professor of pharmacology and anesthesiology, is an expert on the genetics of enzymes that destroy chemical toxins, including the PON family of enzymes. Billecke performed the laboratory work.

The Department of Defense and the Perot Foundation provided funding for the study.

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HIGHLIGHT

Association of Low PON1 Type Q (Type A) Arylesterase Activity with Neurologic Symptom Complexes in Gulf War Veterans

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Association of Low PON1 Type Q (Type A) Arylesterase Activity with Neurologic Symptom Complexes in Gulf War Veterans. Haley, R. W., Billecke, S., and La Du, B. N. (1999). *Toxicol. Appl. Pharmacol.* 157, 227–233.

Previously Haley *et al.* described six possible syndromes identified by factor analysis of symptoms in Gulf War veterans and demonstrated that veterans with these symptom complexes were more neurologically impaired than age–sex–education-matched well controls. They also uncovered strong associations (relative risks 4–8) suggesting that these symptom complexes were related to wartime exposure to combinations of organophosphate pesticides, chemical nerve agents, high concentration DEET insect repellant, and symptoms of advanced acute toxicity after taking pyridostigmine. Here we have shown that compared to controls, ill veterans with the neurologic symptom complexes were more likely to have the R allele (heterozygous QR or homozygous R) than to be homozygous Q for the paraoxonase/arylesterase 1 (PON1) gene. Moreover, low activity of the PON1 type Q (Gln$_{192}$, formerly designated type A) arylesterase allozyme distinguished ill veterans from controls better than just the PON1 genotype or the activity levels of the type R (Arg$_{192}$, formerly designated type B) arylesterase allozyme, total arylesterase, total paraoxonase, or butyrylcholinesterase. A history of advanced acute toxicity after taking pyridostigmine was also correlated with low PON1 type Q arylesterase activity. Type Q is the allozyme of paraoxonase/arylesterase that most efficiently hydrolyzes several organophosphates including sarin, soman, and diazinon. These findings further support the proposal that neurologic symptoms in some Gulf War veterans were caused by environmental chemical exposures.
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Key Words: Persian Gulf syndrome; military personnel; veterans; epidemiology; risk factors; esterases, blood; paraoxonase; butyrylcholinesterase; polymorphism (genetics); isoenzymes; heterozygote; homozygote; brain, drug effects; organophosphorus compounds; pyridostigmine bromide; chemical warfare agents; human; support, non-U.S. gov't; support, U.S. gov't, D.O.D.

In an exploratory analysis of symptoms reported by 249 members of a Naval Reserve battalion who served in the Gulf War, Haley *et al.* identified through factor analysis six unique symptom complexes, which they suggested may represent neurologic syndromes or variants of neurologic injury sustained in the war (Haley *et al.*, 1997a). In a follow-up clinical case-control study performed under investigator blinding, they demonstrated that a subsample of 26 veterans ill with the symptom complexes performed significantly more in the abnormal direction on neuropsychologic and audiovestibular tests of brain function than 20 age–sex–education-matched well controls, findings consistent with subcortical and brainstem dysfunction (Haley *et al.*, 1997b; Hom *et al.*, 1997). In a third study, epidemiologic analysis of self-reported risk factors in the 249-veteran sample found that the three primary symptom complexes were strongly and selectively associated with the risk factors for chemical exposures but not with other highly publicized risk factors, such as smoke from oil well fires, depleted uranium, immunizations, and combat stress (Haley and Kurt, 1997c). In a similar factor analysis of symptoms in Gulf War veterans of four Air Force reserve units, Fukuda *et al.* reproduced the two of Haley's three primary symptom complexes for which they had measured the required symptoms (Fukuda *et al.*, 1998; Haley, 1999).

We undertook the present study in Haley's cases and controls to determine whether specific alleles of the genetic polymorphisms of the paraoxonase/arylesterase (PON1) and butyrylcholinesterase (BChE) genes or the serum activity levels of their various allozymes might have put certain Gulf War veterans at higher risk of neurologic damage from environmental chemical exposures. Mammalian species are protected from organophosphate anticholinesterase poisons by at least two mechanisms (Mutch *et al.*, 1992; Li *et al.*, 1993; Shih *et al.*, 1998): first, BChE (i.e., serum cholinesterase, pseudocholinesterase) binds and sequesters these poisons from neural tissue but does not destroy them; second, paraoxonase/arylesterase destroys them by hydrolysis to harmless products that are excreted. BChE is inactivated in the process, but paraoxonase/arylesterase is not. Certain genetic variants of BChE (e.g., atypical [AA] or silent [SS]) result in abnormally low blood

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TABLE 1

Summary of Epidemiologic Findings on Three Primary Gulf War Neurologic Symptom Complexes Identified by Factor Analysis of Symptoms in Members of a Naval Reserve Battalion Who Served in the Gulf War

Clinical group[a]	Symptom complex name	Mean Halstead Impairment Index (SE)[b]	Percentage unable to work (SE)	Risk factors having relative risks >4 with $p < 0.001$
No post-war health problems	—	0.38 (0.05)	3 (2)	—
Symptom complex 1	"Impaired cognition"	0.43 (0.09)	17 (11)	Wore pesticide-containing pet flea collars; worked as a security guard
Symptom complex 2	"Confusion–ataxia"	0.59 (0.06)	52 (11)	Perceived chemical nerve agent exposure; excessive side effects from pyridostigmine tablets
Symptom complex 3	"Arthro-myoneuropathy"	0.54 (0.10)	14 (7)	Wore insect repellant with high concentrations of DEET; excessive side effects from pyridostigmine tablets

Note. This table was adapted from findings of previously published studies (Haley *et al.*, 1997a,b; Haley and Kurt, 1997c; Hom *et al.*, 1997).

[a] Symptom complexes were defined by factor analysis of symptoms. Symptom complexes 1–3 were derived from strong primary factors, whereas symptom complex 4–6, derived from weak factors, strongly overlapped symptom complex 2.

[b] A composite measure (scale 0–1) combining the information from a battery of clinical measures of brain function; values above 0.4 reliably indicate organic brain dysfunction and distinguish it from psychological conditions (Reitan and Wolfson, 1993).

levels of the enzyme or forms of the enzyme that are less effective in binding organophosphates than the usual BChE (UU) (Jensen *et al.*, 1995). Of two common polymorphisms of the human PON1 gene, Arg or Gln at amino acid position 192, and Leu or Met at amino acid position 55, the former determines three genotypes (Q, QR, and R) that explain the catalytic properties of two allozymes which hydrolyze organophosphates at different rates (Adkins *et al.*, 1993; Humbert *et al.*, 1993).

The type Q allozyme, present in homozygous Q and heterozygous QR individuals, has higher hydrolytic activity against a wide range of agents including sarin, soman, and diazinon but lower activity against paraoxon, the metabolite of parathion (Adkins *et al.*, 1993; Humbert *et al.*, 1993; Davies *et al.*, 1996). In contrast, the type R allozyme in homozygous R and heterozygous QR individuals has the opposite hydrolytic affinities. The two allozymes, Q and R, have about equal activity as arylesterases with such other substrates as phenylacetate and chlorpyrifos-oxon, the metabolite of chlorpyrifos (Dursban). Within each of the PON1 Q/R genotypes, paraoxonase/arylesterase activity varies manyfold among different individuals (Furlong *et al.*, 1989; Mutch *et al.*, 1992). Quantitative differences may predict susceptibility to acute toxicity in animals (Furlong *et al.*, 1989; Costa *et al.*, 1990; Li *et al.*, 1993, 1995; Shih *et al.*, 1998), and dose–response curves for organophosphate toxicity are very steep (Costa *et al.*, 1990), suggesting that small differences in hydrolytic rates below a critical threshold could account for large differences in toxicity (Davies *et al.*, 1996). That the PON1 genotype might predispose to chronic neurodegenerative disease was recently supported by the finding of a higher prevalence rate of Parkinson's disease (odds ratio, 1.6) in people who have the R allele (homozygous R or heterozygous QR) of the PON1 gene than in those who do not (homozygous Q) (Konda and Yamamoto, 1998).

MATERIALS AND METHODS

Human subjects. To test for an association between neurologic illness in Gulf War veterans and characteristics of PON1, we obtained blood samples from 45 of the 46 subjects studied in the Haley *et al.* case-control study (Haley *et al.*, 1997b); the symptoms of the remaining subject (symptom complex 2) were traced to multiple myeloma for which he underwent intensive chemotherapy and bone marrow transplantation. The 25 ill veterans included 5 with symptom complex 1, 12 with symptom complex 2, 5 with symptom complex 3, and 1 each with symptom complexes 4–6. The 20 well controls included 10 well battalion members who served in the Gulf War (the deployed controls) and 10 well battalion members who had remained in the United States during the war (the nondeployed controls).

Table 1 summarizes the clinical features, levels of neurologic impairment and occupational disability, and the risk factor associations of the three primary symptom complexes compared with the healthy veteran population from which the controls were selected. Symptom complex 2 ("confusion–ataxia") was the most serious, with the highest level of brain impairment on the Halstead Impairment Index and with over half being occupationally disabled. Symptom complex 3 ("arthro-myo-neuropathy") was the second most serious, with a high level of brain impairment on the Halstead Index but a low prevalence of occupational disability. Symptom complex 1 ("impaired cognition") was the least serious. Symptom complexes 4 ("phobia–apraxia"), 5 ("fever–adenopathy"), and 6 ("weakness–incontinence") were considered to be variants of symptom complex 2. This was because the degree of clustering of the symptoms (eigenvalues in the factor analysis) was less than those of the three primary symptom complexes, and most of those affected by symptom complexes 4–6 also had symptom complex 2 (Haley *et al.*, 1997a).

Analysis of PON1 genotypes and blood allozyme levels. We determined each subject's PON1 phenotype by measuring serum paraoxonase and arylesterase (phenylacetate) activities and calculating the paraoxonase/arylesterase activity ratio (La Du and Eckerson, 1984b). We also determined the amount of arylesterase activity contributed by each of the Q and R alleles for each QR heterozygous subject by interpolation of the paraoxonase/arylesterase ratio and the total arylesterase activity. Individual PON1 Q/R polymorphisms at position

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192 and L/M polymorphisms at position 55 were determined using blood cellular DNA, PCR amplification, and restriction enzymes, essentially following the procedure described by Humbert *et al.* (1993). Serum BChE activity was measured using benzoylcholine and the standard spectrophotometric method (Kalow and Lindsay, 1955). Standard methods were used to determine the dibucaine numbers (Kalow and Genest, 1957) and fluoride numbers (Harris and Whittaker, 1961). Staff who performed the laboratory tests were blinded to the subjects' case or control group status.

Statistical analyses. Parameters of the distributions were calculated with the Univariate and Frequency procedures, logistic regression analysis was performed with the Logistic procedure, and simple regression analysis with the General Linear Models procedure of the SAS statistical software (SAS Institute, Cary, NC). The odds ratio was calculated by exponentiating the logistic regression coefficient, and the 95% confidence interval of the odds ratio was calculated by exponentiating the likelihood ratio-based confidence limits of the logistic regression coefficient (Hosmer, Jr. and Lemeshow, 1989).

RESULTS

PON and BChE Activity in Cases and Controls

We found that the veterans' health status (case or control group) was significantly associated with their PON1 polymorphism at amino acid position 192: ill veterans were more likely than well controls to have the R allele (QR heterozygotes or R homozygotes) (Fig. 1a and Table 2). Since only 9% of Caucasian populations have the homozygous R genotype (Geldmacher-von and Diepgen, 1998), we had too few in this sample to evaluate it separately. Veterans' health status, however, was not associated with their PON1 polymorphism at amino acid position 55 (Table 2).

Within a given Q/R phenotypic group, ill veterans tended to have lower arylesterase activity than well controls (Fig. 1a), suggesting that enzyme activity levels are important over and above the genotype. To pursue this possibility further, we compared total paraoxonase activity, total arylesterase activity, type Q arylesterase activity, type R arylesterase activity, and BChE activity in cases versus controls. Whereas total arylesterase activity tended to be lower in the ill veterans (97 ± 4) than in the well controls (113 ± 7, $p = 0.08$ by t test), total paraoxonase activity tended paradoxically to be *higher* in the ill veterans (mean 384 ± 34) than in the controls (mean 336 ± 76, $p = 0.6$), and mean BChE activity did not differ between ill veterans (1.29 ± 0.06) and controls (1.29 ± 0.05).

The type Q arylesterase activity, however, was significantly lower in the ill veterans (mean 62 ± 6) than in the well controls (mean 88 ± 11), and this difference was most pronounced for our symptom complexes 2 (mean 56 ± 10) and 4–6 (mean 55 ± 18), the most severely impaired groups clinically (Table 1), than for symptom complexes 1 (mean 72 ± 11) and 3 (mean 69 ± 7) (Fig. 1b). In contrast, type R arylesterase activity tended paradoxically to be higher in the ill veterans (mean 35 ± 6) than in the well controls (mean 24 ± 10, $p = 0.34$). When the Q homozygotes (no type R arylesterase activity) were excluded, however, type R arylesterase activity tended to be lower in the remaining ill veterans (mean 55 ± 3) than in the remaining controls (mean 81 ± 15, $p = 0.14$) (Fig. 1c).

Plotting all subjects by their levels of PON1 type Q arylesterase activity and BChE activity demonstrated a strong association between illness and having a low plasma level of type Q arylesterase activity (Fig. 1f). There was a possible contribution from low levels of BChE activity as well (Fig. 1f). Dichotomizing the distributions at the lowest quartile of the control group to model a threshold effect, we found that being in the lowest quarter of expected type Q arylesterase activity was the strongest predictor of illness (Table 2). This association was strongest with symptom complex 2 (Table 2), the condition previously demonstrated to have the highest rate of occupational disability (Haley *et al.*, 1997a), the most severe neurologic impairment (Haley *et al.*, 1997b), and the strongest epidemiologic associations with risk factors of wartime environmental chemical exposure (Haley and Kurt, 1997c) (Table 1). Being in the lowest quarter of BChE activity also predicted illness, but the difference was not statistically significant (Table 2).

In multivariate logistic regression analyses of the 12 ill veterans with symptom complex 2 versus the 20 controls, the presence of the veterans in the lowest quarter of type Q arylesterase activity remained significantly associated ($p = 0.046$) with illness after controlling for having an R allele (being heterozygous QR or homozygous R) versus not having one (being homozygous Q). Conversely, having an R allele did not remain significantly associated ($p = 0.95$) with illness after controlling for being in the lowest quarter of type Q arylesterase activity.

It is of note that one unusual ill subject had the homozygous R phenotype (no detectable type Q arylesterase), but by PCR-amplified restriction enzyme analysis of DNA he had the heterozygous QR genotype. He also had an unusually high level of BChE activity, the highest in the sample (Fig. 1f), suggesting that even extremely high BChE activity cannot compensate for low type Q arylesterase activity. We are studying this individual further. Also, the three well controls with the lowest type Q arylesterase activity, including the only two with homozygous R genotypes, were in the nondeployed control group and thus were not present in the Kuwaiti Theater of Operations where environmental exposures may have occurred (Figs. 1b and 1f). This probably explains why they remained well despite the absence of type Q arylesterase activity, and it suggests that larger studies in the future may find Gulf War veterans with the homozygous R genotype to be at as high or higher risk for our Gulf War neurologic symptom complexes than the QR heterozygotes with low type Q arylesterase activity (Broomfield and Ford, 1991; Davies *et al.*, 1996).

PON1 Type Q Arylesterase Activity in Pyridostigmine Toxicity

Of the 249 Gulf War veterans originally surveyed, 236 (95%) reported having taken pyridostigmine tablets during the

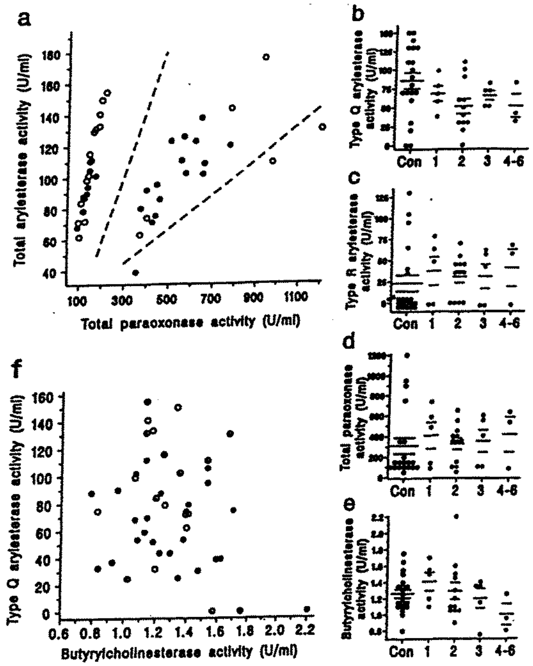

FIG. 1. Distribution of ill veterans (solid circles) and well controls (open circles) by measures of paraoxonase/arylesterase 1 (PON1) and butyrylcholinesterase (BChE) genotypes and plasma allozyme activity. In a, plotting cases and controls by total paraoxonase activity and total arylesterase activity identifies the three PON1 phenotypes separated by dashed lines: homozygous Q (left), heterozygous QR (middle), and homozygous R (right). In b–e, Con indicates the control group, followed by numbers indicating the Haley *et al.* Gulf War-associated neurologic symptom complexes 1–6 (Haley *et al.*, 1997a). In f, a dot in the plot symbol marks one of the 10 controls who were not deployed to the Kuwaiti Theater of Operations during the Gulf War and thus were not exposed to the same environmental conditions.

war (Haley and Kurt, 1997c). Factor analysis of their endorsements of 15 symptoms experienced after taking pyridostigmine tablets identified two important symptom factors (Haley and Kurt, 1997c). The first factor scale measured severe muscarinic (e.g., excessive sweating, tearing, chest tightness, and nausea), nicotinic (e.g., muscle twitching and muscle cramps), and other side effects (e.g., headache and pounding heart beat) of advanced acute toxicity that were reported by 10% or fewer of the 249 participants (Haley and Kurt, 1997c). The second factor scale measured minor muscarinic side effects (e.g., urge to defecate, urge to urinate, and diarrhea) of mild acute toxicity that were reportedly experienced by approximately half of the 249 participants (Haley and Kurt, 1997c). Both groups of symptoms were reported by approximately the same proportions of Israeli soldiers surveyed while taking pyridostigmine under desert conditions during the Gulf War (Sharabi *et al.*, 1991). The factor scale of the symptoms of advanced acute pyridostigmine toxicity, but not that for mild toxicity, significantly predicted the prevalence rates of symptom complexes 2 and 3 (Haley and Kurt, 1997c) (Table 1). For symptom com-

TABLE 2

Association of Threshold Values of Plasma Allozyme Activity and Phenotypes of Paraoxonase/Arylesterase 1 (PON1) and Butyrylcholinesterase (BChE) with Chronic Neurologic Illness in 25 Ill Gulf War Veterans, Including 12 with the More Disabling Symptom Complex 2, Compared with 20 Age–Sex–Education-Matched Well Veteran Controls

	Symptom complex 2 vs controls		All ill veterans vs controls	
Independent variable	Odds ratio (95% CI)[a]	*p*	Odds ratio (95% CI)	*p*
Quartiles of PON1 Type Q arylesterase activity				
Top three quarters	1.0		1.0	
Lowest quarter	9.00 (1.72–46.99)	0.009	4.5 (1.24–16.35)	0.02
Quartiles of BChE activity				
Top three quarters	1.0		1.0	
Lowest quarter	2.83 (0.51–15.77)	0.23	2.67 (0.60–11.80)	0.20
PON1 polymorphism at amino acid position 192				
Has no R allele[b]	1.0		1.0	
Has an R allele[c]	3.27 (0.73–14.55)	0.12	3.50 (1.01–12.18)	0.05
PON1 polymorphism at amino acid position 55				
Has no M allele[d]	1.0		1.0	
Has an M allele[e]	0.67 (0.16–2.82)	0.58	0.85 (0.26–2.80)	0.79
BChE phenotype				
UU	1.0		1.0	
AU	3.80 (0.31–47.21)	0.31	1.65 (0.14–19.65)	0.69

[a] Odds ratio and its 95% confidence interval were estimated by logistic regression analysis.

[b] Homozygous Q.

[c] Either heterozygous QR or homozygous R.

[d] Homozygous L.

[e] Either heterozygous LM or homozygous M.

plex 2, there was a synergistic interaction between the effects of perceived exposure to a chemical weapons attack and the scale of advanced acute toxicity after taking pyridostigmine (Haley and Kurt, 1997c).

In regression analyses of the 32 cases and controls who reported having taken pyridostigmine bromide during their deployment to the Gulf War, the scale of advanced acute toxicity after taking pyridostigmine was inversely associated with subjects' levels of PON1 type Q arylesterase activity ($r = -0.018 \pm$ SE 0.006, $p = 0.007$) but not with levels of PON1 type R arylesterase activity ($r = -0.011 \pm$ SE 0.009) or BChE activity ($r = -0.099 \pm$ SE 1.041). The association with type Q arylesterase activity was strong and statistically significant in younger veterans but not as strong or significant in the older veterans (Fig. 2). The scale of minor muscarinic symptoms of mild acute pyridostigmine toxicity reported by approximately half of troops who took the medication during the war was not significantly associated with PON1 type Q arylesterase activity ($r = -0.007 \pm$ SE 0.006), PON1 type R arylesterase activity ($r = 0.004 \pm$ SE 0.008), or BChE activity ($r = 1.046 \pm$ SE 0.867).

DISCUSSION

Our finding of an association between low levels of PON1 type Q arylesterase activity and chronic neurologic symptoms supports the theory that some Gulf War veterans may have sustained neurologic damage from exposure to one or more of the environmental chemicals against which PON1 type Q arylesterase protects (Broomfield and Ford, 1991; Davies *et al.*, 1996) and potentially explains why some military personnel developed chronic illness and others with similar environmen-

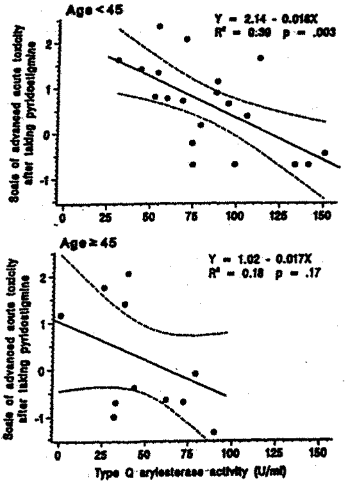

FIG. 2. Inverse association between PON1 type Q arylesterase activity and the scale of advanced acute toxicity reported by 32 veterans to have followed ingestion of pyridostigmine bromide during the Gulf War, stratified by wartime age. Mean type Q arylesterase activity was significantly lower in the men ≥45 years of age at the time of the war (51 ± 9) than in those <45 years of age (83 ± 7, $p = 0.009$ by *t* test).

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tal exposures did not. There is substantial evidence and general acknowledgment that large numbers of military personnel were repetitively exposed to low environmental levels of the organophosphate chemical nerve agent sarin and pesticides such as chlorpyrifos and permethrin, while taking pyridostigmine during the Gulf War (Committee on Banking, Housing and Urban Affairs, 1995; Haley and Kurt, 1997c). Over time these exposures would have covalently bound and inactivated much of the serum BChE that acts as a first line of defense to keep these agents out of neural tissue (Butler *et al.*, 1985). With minimal protection from BChE, the hydrolytic activity of the paraoxonase/arylesterase enzyme system, which is not covalently bound or inactivated by chronic exposure, would be the primary remaining defense (Butler *et al.*, 1985). Since the type Q allozyme has a high level of hydrolytic activity against sarin, soman, diazinon, and similar organophosphates in the implicated class (Adkins *et al.*, 1993; Humbert *et al.*, 1993; Davies *et al.*, 1996), we suggest that in individuals with genetically determined low blood levels of the allozyme chronic exposure would have allowed more entry to neural tissues and greater opportunity for neurotoxic damage. The fact that we found no association of chronic illness with levels of the type R allozyme is consistent with our theory because it has relatively little hydrolytic activity against this class of organophosphates (Adkins *et al.*, 1993; Humbert *et al.*, 1993; Davies *et al.*, 1996). It should be emphasized that as yet no underlying structural, or pathologic, basis for neuronal injury has been shown in Gulf War veterans, although the biologic plausibility of such chronic injury from these agents has been demonstrated in animal models (Husain *et al.*, 1993, 1995; Abou-Donia *et al.*, 1996a,b).

Numerous investigators have predicted that polymorphisms of either BChE or PON1 might predispose to organophosphate toxicity in the general population (La Du and Eckerson, 1984a; Mutch *et al.*, 1992) as well as in Gulf War veterans (Mackness *et al.*, 1997; Loewenstein-Lichtenstein *et al.*, 1995; Abou-Donia *et al.*, 1996a,b; Haley and Kurt, 1997c). Our finding in the most severely affected veterans (symptom complex 2) that the level of PON1 type Q arylesterase activity was more predictive (odds ratio, 9.0) than the PON1 genotype (odds ratio, 3.3) or total levels of paraoxonase or arylesterase activity may provide a powerful approach to relating polymorphic forms of the PON1 gene with chronic neurologic conditions in Gulf War veterans as well as with neurodegenerative diseases and atherosclerotic coronary heart disease in the general population (Kondo and Yamamoto, 1998; Serrato and Marian, 1995; Ruiz *et al.*, 1995).

Our finding of an inverse association of PON1 type Q arylesterase activity and a history of advanced acute toxicity after taking the uniform prophylactic dose of pyridostigmine (Keeler *et al.*, 1991) suggests that the severe acute reaction to pyridostigmine that occurred in approximately 10% of military personnel (Haley and Kurt, 1997c; Sharabi *et al.*, 1991) was a clinical marker for genetically low levels of type Q arylesterase activity. Thus, the strong predictive effects of the scale of advanced acute toxicity after taking pyridostigmine in the risk factor models for neurologic symptom complexes 2 and 3 described by Haley and Kurt (1997c) may have identified a genetic susceptibility to organophosphate poisoning rather than a toxicologic interaction. Unpublished data from our laboratory, however, indicate that paraoxonase/arylesterase does not hydrolyze pyridostigmine; therefore, the interpretation of this finding awaits a more thorough understanding of the complex interactions among these factors.

The nature and causes of illnesses in Gulf War veterans remain controversial. Surveys of standardized symptom questionnaires in large populations have confirmed that the prevalence of many individual symptoms is 2–3 times higher in Gulf War veterans than in nondeployed Gulf War-era military personnel (Iowa Persian Gulf Study Group, 1997). Both studies that have analyzed symptom patterns have found evidence of unique symptom complexes in ill Gulf War veterans (Haley *et al.*, 1997a; Fukuda *et al.*, 1998; Haley, 1999), although this possibility has not yet been widely accepted. The present study and the prior epidemiologic and clinical studies from which it stems (Haley *et al.*, 1997a,b; Haley and Kurt, 1997c; Fukuda *et al.*, 1998; Haley, 1999) represent exploratory efforts to raise promising hypotheses. As such, they involved very detailed clinical, epidemiologic, and laboratory measurements but on relatively small samples that may have been susceptible to errors of sampling or external validity. Consequently, our tentative conclusions should be viewed as a promising theory requiring further support by studies in larger, more representative samples. Such confirmatory studies are currently in progress.

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STATEMENT OF

JOHN McNEILL
ASSISTANT DIRECTOR
VETERANS BENEFITS POLICY

BEFORE THE

SUBCOMMITTEE ON BENEFITS
COMMITTEE ON VETERANS' AFFAIRS
UNITED STATES HOUSE OF REPRESENTATIVES

WITH RESPECT TO

OVERSIGHT HEARING ON
PERSIAN GULF WAR VETERANS' ISSUES

WASHINGTON, D.C. OCTOBER 26, 1999

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to present the views of the Veterans of Foreign Wars of the United States with respect to Persian Gulf War veterans' issues. There are two issues stated for this hearing – the first is that some veterans and advocates perceive a disparity in treatment and claims' adjudication at the Department of Veterans Affairs. The second is, in some instances, that claims are decided differently because in one case a physician may have diagnosed a specific ailment while in another case symptoms are attributable to an undiagnosed illness.

Issues such as these are one of the very reasons the Veterans of Foreign Wars decided two years ago to establish a toll-free "help-line" that veterans could use to inform us of problems they may be encountering on any aspect of VA health care. Since that time, we have received over 17,000 inquiries and, as could be expected, many of those inquiries also involve benefit and entitlement issues. (Presently, about half of those inquiries now pertains to questions such as compensation and pension.) Of the total inquiries we have received, only 30 have been specifically related to Gulf War health-related problems. While the "help-line" inquiries do not reflect any complaints directly received by our service officers throughout the country, our overall experience does not show that there is a systemic problem with either the law or the VA's implementation of it.

Any veteran suffering from disabilities or illnesses associated with environmental hazards exposure has a mandate for VA health care as a member of enrollment priority category six. Further, if a veteran is receiving compensation for any other diagnosed service-connected disability, he/she will at least be in enrollment priority category three and treatment will be provided for essentially all health-care problems.

We did not restrict ourselves to Gulf War health-care issues. Last year, we asked our service officers to send us rating decisions on seven specific areas so we could monitor the Veterans Benefits Administration's quality assurance programs, specifically the Systematic Technical Accuracy Review (STAR) program. Gulf War Undiagnosed Illness claims is another of those seven areas monitored. So far, we have reviewed approximately 50 of these cases and have found an error rate of approximately 20 percent. This figure is below VBA's overall STAR error rate and everyone must agree that 20 percent is still an unacceptable rate.

However, this does not address the entire spectrum on the issue of Gulf War Undiagnosed Illnesses. The purpose of Public Law 103-446, as it pertains to Gulf War veterans, was to "provide compensation to Persian Gulf veterans who suffer from disabilities … that cannot now be diagnosed or defined." This is a benevolent law but one that naturally added much complexity to the VA's system of veterans' claims processing. For the first time ever, rating specialists in the Veterans Benefits Administration have to determine issues of service-connection based not on actual medical diagnoses of particular disabilities and illnesses but just on described symptoms.

It is therefore understandable that there are many questions on the VA's implementation of the law. Of those cases that have been brought to our attention, either on health care or adjudication of claims, we have found that errors resulted more out of confusion and misunderstanding than any deliberate failure to implement the law. In our opinion, there has not been one case that we have not been able to resolve in accordance to how Congress intends the system to be conducted.

Where then does the difficulty arise concerning Gulf War Undiagnosed Illnesses? There are really two problems, in our opinion. The first is directly related to the second purpose for this hearing. It is very difficult for medical professionals to make a determination of an "undiagnosed illness". The natural instinct for a doctor is to find out what's medically wrong so that a proper regiment of treatment can be initiated. Consequently, there certainly may be instances of "forced" diagnosis. Therefore, if any described "evidence" of a disability is not directly related to military service or within the limited presumptive period ascribed to that diagnosed condition, service connection most likely will not be granted.

This indicates a major problem currently with Gulf War Undiagnosed Illnesses. If a veteran is specifically diagnosed with a recognized disability or illness (for example, Amyotrophic Lateral Sclerosis [ALS]) and it is done outside the designated presumptive period for Gulf service, the condition will most likely be classified as non-service connected. This, of course, means no mandate for VA health care or, for that matter, compensation. However, if the veteran receives a medical finding of, for example "motor neuron disorder, etiology unknown", the veteran will be granted service connection for an undiagnosed illness (even though the medical professional might suspect that the "major neuron disorder" could very well be the early manifestation of ALS).

The second problem with Gulf War veterans' claims is really no different than for any other veterans' claim with the VA -- the processing of that claim is not being accomplished as expeditiously or with the desired quality that the VA would like. The problem here is something that we have identified and discussed in congressional testimony over the past two years: the adjudicators and rating specialists in the Veterans Benefits Administration do not have the time to do the job expected of them. Translated another way, there are simply not enough people.

This should not come as a surprise to any one. No one can rightfully expect an agency -- the VBA in this case -- to undergo an overall 22% reduction in Full-Time Employee Equivalency (FTEE) in six years and then add an intricate and complex mission, such as the adjudication of Gulf War Undiagnosed Illnesses, without some major and/or serious degradation in services. And, that is exactly what we now have within the VBA.

This problem is further exacerbated because VA's succession planning estimates indicate that 1,106 Veterans Claims Examiners (VCEs) and 79 Hearing Officers/Decision Review Officers (HO/DROs) will be eligible to retire over the next five years. Coupled with other transition actions, the VBA is projecting the loss of as many as 1,400 highly experienced VCEs in the next five years! When considering that it takes at least three years of involved training and experience to achieve a qualified rating specialist, the Under Secretary for Benefits is now faced with a pending catastrophe.

We realize that the fiscal year 2000 VA appropriations has a programmed overall 164-FTEE increase for the VBA with a 440 increase for the Compensation and Pension Service after implementing transfers from other VBA business lines. But, in reality, this is just "smoke" without the attendant and necessary authority to the Under Secretary for Benefits to offer buy-outs. That authority has not yet been extended and, consequently, we simply do not see any hope for improvement of veterans' claims processing. Indeed, we project that it will soon get worse with the Systematic Technical Accuracy Review (STAR) quality figures reaching a 40-percent error rate and with average processing time for an original compensation claim going well over 200 days.

This Committee has listened to us hold forth on this very point in the past. We don't need to belabor it now. We assert it is not solely Congress's mission to correct this situation, the Administration bears equal responsibility.

Mr. Chairman, the Congress, and particularly you and your colleagues on the Veterans' Affairs Committee, must be commended for the achievements in veterans entitlements during this congress. We would ask that the committee direct its focus toward the personnel situation in the Veterans Benefits Administration.

Mr. Chairman, this concludes my statement and I will be glad to respond to questions. Attached are germane resolutions.

Resolution No. 625

SUPPORT FOR GULF WAR VETERANS

WHEREAS, during the Gulf War, according to official military reports, members of the armed forces were exposed to various toxic substances and environmental hazards; and

WHEREAS, many of these veterans are now suffering from illnesses, or manifesting symptoms of illnesses that may be attributed to their service in the Persian Gulf; and

WHEREAS, many Gulf War veterans did not begin to manifest symptoms until several years after returning from the Persian Gulf; and

WHEREAS, according to reputable scientific studies and reports, Gulf War veterans are reporting symptoms at a greater rate than their peers of the same era who did not deploy to the Persian Gulf; and

WHEREAS, section 1117 of Title 38, United States Code, requires the Department of Veterans Affairs to use the available medical evidence to help determine an appropriate time period for when symptoms associated with such service will manifest; and

WHEREAS, current available medical and scientific evidence has yet to determine the cause, effects, or latency period for the illnesses associated with service in the Persian Gulf; now, therefore

BE IT RESOLVED, by the Veterans of Foreign Wars of the United States, that we continue to urge the Secretary of Veterans Affairs to establish an open ended presumptive period until the medical and scientific community determines an appropriate time in which conditions associated with Gulf War service will manifest; and

BE IT FURTHER RESOLVED, that we urge the Department of Defense and the Department of Veterans Affairs to provide health care for all active duty military veterans whose health has been adversely affected by the Persian Gulf War, and to conduct all necessary tests to determine the causes of these illnesses; and

BE IT FURTHER RESOLVED, veterans of the Gulf War be afforded the same rights and privileges guaranteed to all other veterans; and

BE IT FURTHER RESOLVED, that we urge the Department of Veterans Affairs to act in accordance with Title 38 USC, section 1117, and develop, at the earliest possible date, appropriate definitions or diagnoses of the illnesses associated with service in the Persian Gulf; and

BE IT FURTHER RESOLVED, that we urge Congress to adequately fund appropriate medical and scientific research, and the Department of Defense, Health and Human Services, and Veterans Affairs to implement all relevant laws that support all research efforts; and

BE IT FURTHER RESOLVED, that we urge the Departments of Defense, Health and Human Service, and Veterans Affairs and the Congress to fund appropriate research into the causes of these illnesses; and

BE IT FURTHER RESOLVED, that the VFW continue to closely monitor this issue and urge appropriate corrective action when necessary to assist Gulf War veterans and their families to include veterans who served in the nations of Turkey and Israel.

Resolution No. 634

OPPOSE STAFF REDUCTIONS FOR THE VETERANS BENEFITS ADMINISTRATION

WHEREAS, the timeliness and quality of claims processing in the VA has made some improvement in recent years; and

WHEREAS, this improvement has occurred primarily through resorting to costly and inherently inefficient short-term measures such as overtime, "brokering" of cases between regional offices, and "help teams"; and

WHEREAS, the VBA has an improvement plan known as Business Process Re-engineering to resolve all of its claims processing deficiencies and would help make the VA a premier government agency in customer service; and

WHEREAS, under the VA budget plan for the next five years, the Veterans Benefits Administration will continue to lose substantial manpower (FTEE -- Full-time Equivalency); and

WHEREAS, the National Academy of Public Administration (NAPA) in its August 1997 report, *Management of Compensation and Pension Benefits Claims Processes for Veterans*, was very critical of VBA's planned staff reductions as premature and jeopardizing any forward movement on Business Process Re-engineering; and

WHEREAS, the VBA has already recently suffered staff reductions on an average of five percent annually; and

WHEREAS, NAPA also urged that Congress take immediate action to sustain the VBA work force at least at Fiscal Year 1997 levels; and

WHEREAS, the Administration has proposed an 125 FTEE reduction for VBA in the FY 1999 VA budget; and

WHEREAS, the FY 1999 *Veterans Independent Budget and Policy* found that, because of prior deep cuts in all of VBA's services, shifting workers internally will only rearrange the areas of the manpower crisis and that instead, current staff levels must be increased in Compensation and Pension Service and maintained in the other VBA components; now, therefore

BE IT RESOLVED, by the Veterans of Foreign Wars of the United States, that we urge Congress to include sufficient funding in VA's appropriations to increase FTEE in the Compensation and Pension Service by 500 and maintain FTEE at the FY 1997 levels in the other VBA components.

Resolution No. 698

AMYOTROPHIC LATERAL SCLEROSIS (LOU GEHRIG'S DISEASE) HIGH AMONG GULF WAR VETERANS

WHEREAS, the Department of Veterans affairs is trying to determine why the fatal wasting disease Amyotrophic Lateral Sclerosis, (ALS) may have stricken more than 40 Persian Gulf Veterans; and

WHEREAS, ALS is a progressive disease that destroys motor neurons, the specialized brain and spinal cord nerve cells that control muscles; and

WHEREAS, while progression of the disease may vary, approximately 50 percent of people with the disease die within three years of the first symptoms; and

WHEREAS, an estimated 30,000 Americans (less than one percent of the population) suffer from this disease; and

WHEREAS, it typically appears in people between the ages of 50 and 70; and

WHEREAS, the average age of Persian Gulf Veteran is 31; and

WHEREAS, the incidence of this disease among people in this age group is so low that it cannot be reliably measured; and

WHEREAS, estimates suggest that normal risk for a person in their 30s to contract ALS is less than one in one million per year; and

WHEREAS, the rate of contracting this disease in the Gulf War veteran population would normally be expected to be around six cases given their age and physical condition; now, therefore

BE IT RESOLVED by the Veterans of Foreign Wars of the United States that we call for intensified medical and scientific research to determine the cause of Amyotrophic Lateral Sclerosis among Gulf War Veterans, and in the interim we urge the Department of Veterans Affairs grant an open-ended presumption of service connection for Amyotrophic Lateral Sclerosis for Persian Gulf War veterans until such time as the research is complete.

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A Not-For-Profit Veterans Service Organization Chartered by the United States Congress

Statement of

VIETNAM VETERANS OF AMERICA

Submitted by

William T. Frasure
Deputy Director
Government Relations Department

Before the
House Veterans Affairs Subcommittee on Benefits

Regarding

Gulf War Undiagnosed Illness Claims

October 26, 1999

Mr. Chairman and members of the subcommittee, on behalf of our members, Persian Gulf War veterans, and all American veterans, Vietnam Veterans of America (VVA) thanks you for this opportunity to comment on issues regarding Persian Gulf War veterans. Among a host of Gulf War veteran issues, VVA is seriously concerned about the manner in which Gulf War veterans' claims are being adjudicated by the Department of Veterans Affairs (VA).

First, I would like to applaud this subcommittee and Congress for extending the portion of Public Law 103-466 that pertains to undiagnosed illness claims. As there are still over 29,000 pending claims, and over 132,000 disabled Gulf War veterans, your work remains integral to the claims adjudication process for Gulf War veterans.

VVA firmly believes that the VA interprets PL 103-466 in a limited and overly meticulous scope that has resulted in far too many sick Gulf War veterans having their war-related conditions unattended to. There are different contributing factors to the thousands of mistaken denials of Gulf War veterans' claims, and each one needs to be addressed.

Many Gulf War veterans have conditions that are not "clearly defined" illnesses (according to the VA). These conditions range from chronic fatigue to fibromyalgia, to multiple chemical sensitivity and a myriad of respiratory, digestive, and muscular-skeletal problems. All of the claims for these conditions are prima facie denied on the grounds that the illness is not "clearly defined."

Too many times the veteran has produced documents recording a medical condition, only to have his condition labeled as "undiagnosed" by the VA. The claim is then usually denied.

Time and time again, Gulf War veterans are diagnosed with a psychological malady when they seek help from the VA for a physical problem. Surely, many Gulf War veterans are indeed afflicted with psychological problems stemming from war-related incidents and exposure to various toxins and experimental drugs that have possible long term cognitive effects. However, many of the psychological diagnoses of Gulf War veterans by the VA have been hastily applied because the veterans' conditions are foreign to VA physicians and difficult to precisely diagnose. The logic here is that "if we don't know what the veteran's physical condition is, it must be a figment of his mind."

The average Gulf War veteran is not deeply versed in all the nuances and technicalities of the VA claims adjudication process. While VVA maintains that the VA has a responsibility to ensure that a veteran has professional assistance in developing a claim, unfortunately, many a veteran simply fills out the paperwork on his/her own, and fills it out incorrectly, ignorant of the concept of "developing" a claim.

The bottom line of these noted deficiencies is that 78% of Gulf War veterans' claims for undiagnosed illnesses are denied. The bottom line is that thousands of Gulf War veterans with serious physical illnesses and conditions have been left unattended to.

VVA ardently supports the suggestion of Chairman Bob Stump, contained in his letter to VA Secretary Togo West (June 3, 1998) that the VA must adopt uniform standards to adjudicate Gulf War claims. Furthermore, as Chairman Stump suggested, we believe it must be clearly noted that the VA must decide in favor of the veteran, when there is reasonable doubt. VVA would like to point out that since no D.O.D. records were kept on the administration of PB pills, Depleted Uranium exposures, chemical agent exposures, and exposures to oil well fires, there should be a clear, stated policy within the VA, that when a Gulf War veteran is attempting to develop a claim that is related to any of these exposures, reasonable doubt should always be established, and the decision made in favor of the veteran.

VVA suggests three immediate steps be taken to remedy the problems associated with the adjudication process of Gulf War claims:

1) There must be further training of VA adjudicators and VA physicians for Gulf War specific cases, particularly in light of the recent decision in ***Morton v. West, 12 Vet. App. 477 (1999).*** The U.S. Court of Appeals for Veterans Claims has decided that a veteran's claim must be well grounded in order for the VA to assume responsibility in assisting the veteran in developing the veteran's claim. This decision, however, should not be applied to claims involving allegations of undiagnosed illness in gulf War veterans because P.L. 103-446 expressly mandates that such claims are, per se, well-grounded. Consequently, the statutory grant of well-groundedness with respect to Gulf War undiagnosed illness claims removes them from the purview of *Morton v. West.*

2) Current VA training materials harp too much on stress while neglecting research on toxic exposures and not offering clear guidelines on claim verification reporting procedures for undiagnosed conditions. The VA needs to develop a comprehensive claims processing training program that includes the Veteran Service Organizations (VSO Service Officers) and Gulf War veterans.

3) VVA joins with the National Gulf War Resource Center (NGWC) in urging Congress to see to it that the General Accounting Office (GAO) investigate the discrepancy between the Congressional *intent* of PL 103-466 and the rather hollow implementation of PL 103-466 by the VA.

The problems regarding claims adjudication of Gulf War undiagnosed illness claims are symptomatic of the overall situation at the VA. VVA sees a lack of

accountability, quality assurance, and uniformity in the VA claims adjudication process. While VA contends that the claims adjudication process is non-adversarial, VVA and veterans know otherwise.

VVA suggests the following: 1) Claims adjudicators should receive regular training and should be tested annually for proficiency and job knowledge. Those adjudicators that do well should be rewarded while those adjudicators who "fail to make the grade" should face punitive action.

2) Veterans should have the right to have an attorney assist in the development and representation of a claim at the regional level.

3) VA, in conjunction with the VSOs, should develop and implement a training program specific to "non-traditional" claims-i.e., claims that deal with conditions that are not easily diagnosed and rely heavily on medical research opinions such as Agent Orange and undiagnosed illnesses. The VA needs to exercise foresight and begin preparing now for the disabilities that are going to be a result of 21st century combat. Medical science regarding warfare is entering a nebulous, uncharted territory marked by rapid advancements in technology, genetics, and chemical and biological warfare.

There is several other Gulf War veteran issues that we believe need to be addressed. 38 CFR Section 3.317 needs to be amended to allow claims by those American veterans who served in Turkey and Israel since August 2, 1990. Many of these veterans were subject to toxic exposures and now have undiagnosed illnesses. Presently, DoD classifies Turkey and Israel as nations within the Gulf War theater. The VA does not. VVA queries as to what authority VA actually has to define a theater of war. As a result of VA's definition, many Gulf War veterans have been denied benefits and healthcare.

Approximately twenty U.S. veterans were taken prisoner by Iraq and held between August 1990 and December 1990. Currently, these veterans are not classified as Prisoners of War and thus are not eligible for certain VA benefits that they certainly are entitled to. DoD classifies these veterans as "beleaguered." VVA finds this to be a disgrace and urges Congress to reclassify these veterans as "former prisoners of war."

In light of recent Pentagon admissions of multiple and widespread toxic exposures, VVA believes that the provision of PL 103-466 calling for medical evaluations of spouses and children of Gulf War veterans needs to be extended. The VA has hesitantly implemented this program that is set to expire on December 31, 1999.

VVA roundly applauds Congress for the enactment of PL 105-277. As a result of PL-105-277 the National Academy of Sciences (NAS) is reviewing reports on 30 toxins (in the Gulf War theater) and their associations with illnesses. Until NAS completely finishes their work, benefits for undiagnosed illnesses, available under 103-446, should have an open presumptive period.

We support Congress's request for a GAO inquiry into depleted uranium exposures and Gulf War undiagnosed illnesses. DoD failed to follow prescribed safety regulations regarding DU in the Gulf War, despite thousands of soldiers being exposed to DU. Upon the release of the GAO report, Congress should hold hearings on this matter.

VVA observes with exasperation the recent prompt apologies to Department of Energy (DoE) workers for DU exposures. DoE swiftly implemented safety training, healthcare, and compensation for those affected workers. We are miffed at the disparity of treatment between exposed U.S. federal civil service workers and exposed U.S. soldiers. We urge congress to request the Departments of Defense and VA to comment on this disparity.

The recent announcement by the RAND corporation that PB pills "cannot be ruled out" as a causal factor of Gulf War undiagnosed illnesses has served to only solidify the established pattern of dishonesty, arrogance, and deception by DoD in regards to Gulf War undiagnosed illnesses. DoD publicly made the blanket statement that no soldiers were exposed to low level chemical agents. It is now a known fact, a fact that was covered up and unearthed, that thousands of soldiers in the Gulf were exposed to low level chemical exposures. DoD made the arbitrary statement that PB Pills pose no health risk and are not a cause of Gulf War undiagnosed illnesses. It has now been found that PB pills just may in fact be a causal factor of Gulf War undiagnosed illnesses.

The absolute bottom line is that thousands of Gulf War veterans remain sick and are not receiving healthcare by the VA. These facts are well known outside of Washington D.C. and have served as a major factor in the current recruiting dilemma of the military. While DoD has expended vast resources toward downplaying the problem of Gulf War undiagnosed illnesses, high school students across the nation have received the word from their brothers, sisters, friends, and cousins that the military is a raw deal. It is the common perception today among youth that it is simply not worth it to join the military. This perception is in large part, a direct result of DoD's handling of the Gulf War undiagnosed illnesses issue.

VVA urges Congress to keep in mind the bottom line-the health of our veterans, and to ensure that DoD does not repeat this debacle.

Again, thank you for this opportunity to comment on Gulf War undiagnosed illnesses. I stand ready for any questions you may have.

Statement for the Record by
Julia Y. Dyckman, RN, MPH, Capt USN (TDRL)
for
U.S. House of Representatives
Committee on Veterans' Affairs
Subcommittee on Benefits
October 26, 1999

I want to thank the Subcommittee for allowing me to submit this testimony for the record. However, I would have preferred to present this information in person in order to clarify or answer any questions regarding the information I have submitted.

I would like to address and present evidence to support the problems with the disparity in treatment and claims adjudication in the Veterans Administration. The problems include entrance into the VA system via the claims forms and their subsequent adjudication, and the problems of obtaining treatment and compensation for Gulf War syndrome when it is called an 'undiagnosed illness'. I am also including recommendations for correcting the problems that I have noted.

I would like to say at this time that my testimony is based on my personal experiences and difficulties with the VA system and I feel that it represents the average veteran's problems with a very complicated and uncaring system.

I am on TDRL (Temporary Disabled Retired List) from the US Navy as 90% disabled and I will not derive ANY increased benefits from the VA as a result of this testimony.

BACKGROUND

I served as a Lieutenant, Nurse Corps, USNR during Vietnam on board the hospital ship USS Sanctuary (AH-17) from December 1969 to December 1970. In 1971 I transferred to the Navy Reserve in a drill status..

At the time of the Persian Gulf war, I was a Commander in the Naval Reserve who was activated January 16, 1991 to serve at Combat Zone Fleet Hospital 15. Fleet Hospital 15 was a 500 bed hospital with 948 personnel including the construction battalion units. It was assembled at a site west of Al Jubayl, Saudi Arabia and was operational within 12 days of arriving in-theater.

Patient Care consisted of direct front-line casualties, patients from second echelon facilities and walk-in patients. In addition, we handled sick call for our own personnel.

Environmental conditions that existed at the hospital site were:

- Black skies with clearing at the horizon;
- Rain sometimes consisting of oil droplets;
- Mysterious clouds passing directly overhead;
- Occasional ammonia smells;
- Scud attacks (5 separate times from Feb 1 to Feb 26, 1991)
- Scud missile blowing up directly overhead.
- Fertilizer plant within 5 miles of our Fleet Hospital

These environmental and wartime conditions resulted in my having medical problems that were documented in my Military Health Record while on active duty; these are extracts from that record:

16 Jan 1991	Mustered as physically fit
30 Jan 1991	Arrived in Saudi Arabia
08 Feb 1991	Erythenia Multiform – possible drug reaction to diazide. Several days of papules, right foot. Told to stop blood pressure medicine for possible allergy.
19 Feb 1991	Blood pressure monitoring due to possible allergy. Still have skin eruption, right foot. BP 118/92.
25 Feb 1991	Reaction to Anthrax Vaccine #2 given on 22 Feb 1991. Reaction of chills, muscle pain – IMP – Local and mild system reaction to vaccine. BP 140/94, P 98.
27 Feb 1991	Seen for Flu, head, nose, throat. Prescription for Tenormin. No

	Tenormin in pharmacy, medication changed to Vasotec. BP 136/100, P 98.
01 Mar 1991	Seen for right foot problem
05 Mar 1991	Seen in Dermatology. D/C Gris Pen because of stomach upset.
13 Mar 1991	Seen for earache. P 96.
19 Mar 1991	Treated for bronchitis and stomach problem. (Noted occ bronchiti and wheezes in lung. Nausea – gastritis.)
26 Mar 1991	Prior to departure from Saudi Arabia, experienced pain in left foot. Discussed with podiatrist but was not written down since health record was packed on the airplane.
01 Apr 1991	Seen at Mechanicsburg Branch Clinic for respiratory problems. Pharyngitis, sinusitis, cough. Started on Amoxicillin X 10 days. Hearing test done. BP 128/92, P 100.
06 Apr 1991	Seen in Harrisburg N& MC Reserve Center for left foot pain. Not Physically Qualified for Physical Fitness Test. Qualified to begin Active Duty for Training except for the noted foot problem.
08 Apr 1991	Seen in Medical Clinic, Philadelphia, PA. "Attempt" to remove foreign body from left foot. P 100.
15 Apr 1991	Seen at Mechanicsbug Branch Clinic referred to surgery clinic. Removed material from left foot. T 99.1, P 92.
16 Apr 1991	Canceled ADT - remained on Active Duty due to medical problems. Seen in Surgery Clinic, Philadelphia Naval Hospital for foot problem. Told to stay off foot as much as possible.
26 Apr 1991	Seen at Mechanicsburg Branch Clinic for foot problem and flu symptoms. Referred to Philadelphia Naval Hospital, Internal Medicine Clinic. P 102, T 99.1.
30 Apr 1991	Seen in Internal Medicine Clinic, Philadelphia Naval Hospital for cough, night sweats, flu symptoms.
01 May 1991	Seen in Orthopedic Clinic, Philadelphia Naval Hospital referred for bone scan.
01 May 1991	Seen in Internal Medicine Clinic, Philadelphia Naval Hospital for cough. BP checked, possible infection?. Advised to return in 1-2 weeks. (D/C Vasotec because of continuing cough)
07 May 1991	Philadelphia Naval Hospital, BP 144/112, BP 132/96, BP 132/94
08 May 1991	Seen in Emergency Room, Philadelphia Naval Hospital, for upset stomach, chills. P 109.
08 May 1991	Seen in Internal Medicine Clinic, Philadelphia Naval Hospital for abdominal pain, persistent cough, palpitations, and diarrhea. UGI requested by clinic.
10 May 1991	Seen in Internal Medicine Clinic, Philadelphia Naval Hospital, BP 130/84, P 100 - Results of UGI - reflux and superficial gastric ulcer.
13 May 1991	Seen in Internal Medicine Clinic, Philadelphia Naval Hospital, BP 122/82. Meds: Tagament - for ulcer, and Tenormin - for blood pressure.
13 May 1991	Seen in Orthopedic Clinic, Philadelphia Naval Hospital for bone scan. General Surgery Clinic, assigned light duty by Dr. Thorpe per memorandum.
14 May 1991	Philadelphia Naval Hospital, evaluation for continued problem.
15 May 1991	Bone scan performed - no evidence of osteomyelitis.
16 May 1991	Internal Medicine Clinic, Philadelphia Naval Hospital, cough, LLQ pain, nausea, but impression: medically stable.
16 May 1991	Orthopedic Clinic, Philadelphia Naval Hospital, discharged from Active Duty on medications: Tagament for possible ulcer, Tenormin for high blood pressure. Still had mild left foot pain, decreased sensation.

Let me reiterate that we did not know the causes of these problems or how severe and long lasting these problems would become.

I had a complete military physical when mobilized and was in excellent health before leaving the United States.

RETURN TO THE UNITED STATES AND MY DEALINGS WITH THE VETERANS ADMINISTRATION CLINICS AND HOSPITALS AND ADMINISTRATIVE PROCEDURES

Since I was ineligible for treatment from the active duty military, the only recourse was civilian or the VA. Since I am a Vietnam veteran and have a service connected disability (zero compensation) access to VA care was available to some extent. There was not a Persian Gulf Registry in effect or available in 1991 nor were there any VA Persian Gulf centers.

I. Initial Treatment

I presented myself to the VA for treatment.

- At the VA Outpatient Clinic, in Harrisburg in August 1991, I was seen for "Feet" problems; was given Tylenol and told that "nothing is wrong with you!"

II. Follow-on Treatment

I had the following medical conditions and therefore I requested a referral to the VA Medical Center Lebanon because I thought they would have some protocol to deal with Persian Gulf veterans.

- Hearing loss;
- Bronchitis;
- Chronic cough with a shortness of breath;
- Hypertension;
- Rash on the right foot;
- Bilateral foot pain;
- Stomach ulcer;
- Occasional to frequent diarrhea;
- Headaches;
- Joint pains:
- Abdominal pain

At the VAMC Lebanon (starting in September 1991), I was seen in multiple clinics for compensation exams and evaluations. In order to be seen for my problems, I had to fill out a VA Disability Compensation Claim. If I did not claim a disability, I would be seen for a non-service connected illness and my medical insurance would be charged. Many Persian Gulf veterans had bills sent to their insurance companies which resulted in loss of civilian insurance. No Persian Gulf protocol existed at this time.

III. Veteran's Application for Compensation or Pension form

I saw the VA Compensation and Disability representative who assisted me in filling out the necessary form (VA Form 21-526). The form was very complex and instructions were non-existent. You cannot fill out the form yourself because you do not know what the VA actually wants. (See attachment 1).

For example section 17 wants you to list the "NATURE OF SICKNESS, DISEASE OR INJURIES FOR WHICH THIS CLAIM IS MADE AND DATE EACH BEGAN" This is all to be placed in a space that is about 7 ½ inches wide and only ½ inch tall. It does not state that it really wants diagnoses and NOT symptoms. However, most veterans only know symptoms since their problems may not have been diagnosed as yet.

See section 19. This requests information on the "NATURE OF SICKNESS…" again only two lines provided and about 1 inch of space. It says attach medical records, but as the case is reviewed it seems that these records are NOT referred to.

See section 20. The same problem as above. List civilian physicians and hospitals. No space is available. I was told that no information should be attached except medical records.

IV. Results of Initial Claim

I received a letter from the VA in Philadelphia dated May 15, 1992 (See attachment 2). This letter was a denial of claims. The problem was that the:

- Explanations were inadequate and never told you what the problem was with your submittal.
- Even though they had requested civilian physician input, it was not utilized.

- The third to the last paragraph stated: "We have considered a 10 percent evaluation because you have more than one non-compensable disability. Title 38 CFR 3.324 provides that whenever a veteran is suffering from two or more separate permanent service-connected disabilities of such character as clearly to interfere with normal employability, even though none of the disabilities may be of compensable degree, the VA is authorized to apply a 10 percent evaluation. The evidence does not show employment impairment due to your service connected conditions". I didn't show any employment impairment because the FORM only asked for employability information if you were 100% disabled, it has no provision for stating how you may have lost or reduced employment.

V. Next Several Years

From 1992 through 1996 I was in a constant process of appealing VA denial letters and resubmitting 'new' information.

1. For over two and one-half years I was shuffled from one clinic to another each investigating a different body system. No coordinated treatment or diagnostic effort was ever experienced. I was so frustrated that I went to the VA patient advocate and asked to be sent to a VA Persian Gulf center for testing, evaluation and treatment. I had heard about the Persian Gulf Registry at this time and asked to be included. A physical examination was performed by VA Lebanon in October 1993. A summary letter was provided to me and it stated that "It is unclear if your health problems are related to your Persian Gulf service". There were no lab test results reported in the summary.
2. I went to the Persian Gulf Referral Center, VA Medical Center, Washington DC on October 27, 1993. After two weeks I completed their evaluation process and received a Discharge Diagnosis of "Persian Gulf war Syndrome". (Washington VAMC, VA Form 10-1000 DISCHARGE SUMMARY, patient Dyckman, Julia, dated 01/31/94)(See attachment 3).
3. I was evaluated by the Department of Defense CCEP (Comprehensive Clinical Evaluation Program) over a three year period. This resulted in Medical and Physical Evaluation Boards by the US Navy. I was awarded 90% disability with the number one condition being "Diffusely Increased Sympathetic Nerve Traffic". (Department of the Navy, Physical Evaluation Board letter 1850 PEB 10 dated 16 Aug 1996) (See attachment 4).
4. During the CCEP I was evaluated by the National Institutes of Health(NIH) and found to have "autonomic nervous system dysfunction". This diagnosis supported the primary diagnosis by the Navy boards.
5. Private physician's care during this time frame involved: gall bladder removal; complete hysterectomy; removal of stomach polyps; UGI's; extensive joint and muscle testing; brain MRI's and sleep testing.
6. VA ignored their own diagnosis of "Persian Gulf war Syndrome" and "undiagnosed illness". The VA also ignored the NIH and Navy diagnosis of autonomic nervous system dysfunction. The VA gave me an overall disability rating of 80% which was comprised of : 60% for chronic fatigue(CFS); 30% for PTSD; 30% for irritable bowel; and 10% for plantar faciitis.

From 1996 to the present:

7. I participated in major studies conducted on sick Gulf War veterans, for example: One by the University of Pennsylvania (which included a muscle biopsy that was found to be "abnormal").
8. I even traveled cross country for a private physician specializing in Persian Gulf illness (using up savings); had surgical removal of the uvula because of sleep apnea; had UGI and removal of 1 foot of colon due to chronic diverticulitis; seeing private physician for deterioration of joints and bones and chronic pain; still have rashes, fevers, heart palpitations, chronic infections, severe facial pain; diagnosed with fibromyalgia, lupus, diabetes and Baretts esophagitis (pre-cancerous).
9. Treatment by VA medical personnel (including a "Persian Gulf Physician") consisted of symptomatic treatment with little relief and total failure to stop

progression of illness since there is NO GULF WAR SYNDROME. If there is not *disease* per se, there can be no recommended treatment protocol.

10. I volunteered for VA study programs on sick GW veterans, but because I have already been on long-term antibiotics and another study built around an aerobic exercise protocol is to far way for me to participate as driving a car is usually not possible because of my health.
11. I have been turned down for treatment by three TRI-CARE primary care physicians because (again) there is NO GULF WAR SYNDROME (therefore there can be no treatment).
12. Medicare provides another Catch-22 in that it will only pay for diagnosed illnesses and nothing for lab or x-rays or treatment of undiagnosed conditions.
13. Private physicians cannot be paid for testing or treatment of Gulf war Syndrome because there is no ICD-9 (International Classification of Diseases) code. No code, no disease, no diagnostic testing, no treatment, no money for the physician whom agrees something is wrong with his patient.

VI. Governmental Action

1. Through the years, investigations by numerous medical and political bodies have resulted in:
    - Recognition of nerve (including brain) damage by the University of Texas, et al.
    - Detection of squalene in blood samples (an adjuvant NOT approved by FDA and only used in experimental vaccines)
    - Mycoplasma spp. infections
    - Multiple chemical exposures and exposure levels
    - Anti-nerve agent pills causing damage
    - "Stress" diagnosis

2. Failure to establish an ICD-9 code for Gulf War Syndrome.
3. Failure by the VA medical personnel to provide a positive atmosphere when dealing with sick GW veterans. Again, "undiagnosed" means one does not have a real illness. When a veteran files a claim he has to have subjective signs that are not normal; therefore, he/she cannot have an undiagnosed disease as healthy people do not manifest abnormal symptoms without an underlying body dysfunction. GWS has an established set of symptoms and criteria. Why has the VA not acted on its own established criteria and symptomatology for GWS.

VII. Recommendations

1. Modify the entrance procedures into the VA system for Persian Gulf illness. The current procedures are based around submitting a claim, which denies most illnesses of the Persian Gulf war. Documentation in the Persian Gulf area was difficult even when early symptoms presented. Most in-theater documents were lost or misplaced.
2. Modify the Veteran's Application for Compensation or Pension form (VA Form 21-526) to provide adequate space to document the absolute minimum information needed to process the claims. The VA needs to provide veterans with assistance to properly fill out the form. Veterans also need access to current VA regulations.
3. Change the two year limit of at least 10% disability. This limit is unrealistic due to the specific nature of Persian Gulf illness. Symptoms may be mild at first but then progress to different levels of illnesses.
4. Strongly use the civilian medical documentation in considering service connected claims. Very often civilian medical tests are positive and the VA tests are negative, casting doubt on the validity of the VA tests.
5. Stop requiring veterans to continually prove they are ill. Self reporting is ignored and a psychiatric diagnosis is often given.

6. Allow a selection of physicians. VAMC Lebanon has a 600 Persian Gulf war patient population yet physicians are being cut. This additionally limits access to care and diagnosis.
7. VA claims adjudication process is too lengthy. Claims take years to process. Adjudication officers are NOT consistent among VA regions.
8. Individual adjudication officers have too much power. They can and do ignore both military and civilian physician diagnoses and make their own diagnoses even though they are NOT physicians.
9. Appeal process is way too long. More adjudication officers would shorten the process. Establish standards using medical and nursing input to provide consistent diagnoses.
10. Establish an ICD-9 code for Gulf War Syndrome and a definition. The MERCK Manual of Diagnosis and Therapy, Seventeenth Edition, has a chapter on "Syndromes of Uncertain Origin" with Gulf War Syndrome included. However, Gulf War Syndrome is the only syndrome without an ICD-9 code. The definition, even when the etiology is unknown, has to include possible exposures and symptoms. Military Gulf War service cannot be one of the criteria to prove illness since civilians and families also have the syndrome.

VIII. Conclusion

The VA has received significant funding for the investigation and treatment of Gulf War Syndrome. If they will not name this condition then it is difficult to accept the amount of funding they have received for a non-diagnosed illness. This illness can be called anything (e.g. Gulf War Syndrome or Saddam's Revenge or Schwarzkopf's Folly or etc.). The VA should be the leader in setting diagnosis and treatment which is what the veterans are asking for. It has been nine years, which is too long. Lives could have been saved or at least the quality of life could have been improved.

OMB Approved No. 2900-0001
Respondent Burden: 1 hour and 30 minutes

Department of Veterans Affairs

VETERAN'S APPLICATION FOR COMPENSATION OR PENSION

IMPORTANT: Read attached General and Specific Instructions before completing this form. Type, print, or write plainly.

DO NOT WRITE IN THIS SPACE
VA DATE STAMP

1A. FIRST, MIDDLE, LAST NAME OF VETERAN: Julia Yastishock Dyckman

1B. TELEPHONE NO. (Include Area Code)
DAY: (717) 657-1354
EVENING: (717) 657-1354

1C. IF YOU SERVED UNDER ANOTHER NAME, GIVE NAME AND PERIOD DURING WHICH YOU SERVED AND SERVICE NUMBER: Julia Ann Yastishock 726647W Oct 67 – 18 Dec 73

3A. VETERAN'S SOCIAL SECURITY NO.: [redacted]

2. MAILING ADDRESS OF VETERAN (Number and street or rural route, city or P.O., State and ZIP Code):
1505 Pine Hollow Rd.
HARRISBURG, PA. 17109-5680

3B. SPOUSE'S SOCIAL SECURITY NO.: [redacted]

4. DATE OF BIRTH: [redacted]

5. PLACE OF BIRTH: Pottsville, PA

6. SEX: Female

7. RAILROAD RETIREMENT NO.:

8. HAVE YOU EVER FILED A CLAIM FOR COMPENSATION FROM THE OFFICE OF WORKERS' COMPENSATION PROGRAMS? (Formerly the U.S. Bureau of Employees Compensation)
☐ YES ☒ NO

9A. VA FILE NUMBER: C-[redacted]

9B. HAVE YOU PREVIOUSLY FILED A CLAIM FOR ANY BENEFIT WITH VA?
☐ NONE
☐ HOSPITALIZATION OR MEDICAL CARE
☒ DISABILITY COMPENSATION OR PENSION
☐ VOCATIONAL REHABILITATION
☐ VETERANS EDUCATIONAL ASSISTANCE
☐ DEPENDENTS EDUCATIONAL ASSISTANCE
☐ DENTAL OR OUTPATIENT TREATMENT
☐ WAIVER OF NSLI PREMIUMS
☐ OTHER (Specify)

9C. VA OFFICE HAVING YOUR RECORDS (If known): Philadelphia, PA.

SERVICE INFORMATION

NOTE: Enter complete information for each period of active duty. Attach DD Form 214 or other separation papers for all periods of active duty to expedite processing of your claim. If you do NOT have your DD Form 214 or other separation papers check (✓) here ☐

10A. ENTERED ACTIVE SERVICE		10B. SERVICE NO.	10C. SEPARATED FROM ACTIVE SERVICE		10D. GRADE, RANK OR RATING, ORGANIZATION OR BRANCH OF SERVICE
DATE	PLACE		DATE	PLACE	
30 OCT 67	HARRISBURG, PA	[redacted]	26 JAN 71	NAVSTA, T.I. SAN FRAN., CALIF.	LT/03 USNR
16 JAN 91	HARRISBURG, PA	[redacted]	30 MAY 91	PERSUPPDET PHILA., PA.	CDR/05 USNR

10E. HAVE YOU EVER BEEN A PRISONER OF WAR? (If "Yes," complete Items 10F and 10G)
☐ YES ☒ NO

10F. NAME OF COUNTRY: —

10G. DATES OF CONFINEMENT: —

RESERVE AND NATIONAL GUARD SERVICE

NOTE: Enter complete information for each period of Reserve and National Guard service. Attach any separation papers you have.

11A. ENTERED SERVICE		11B. SERVICE NO.	11C. SEPARATED FROM SERVICE		11D. GRADE, RANK OR RATING, ORGANIZATION OR BRANCH OF SERVICE
DATE	PLACE		DATE	PLACE	
30 OCT 67	HBG, PA.	[redacted]	—	—	CURRENTLY-READY RESERVE CAPT/06 USNR

12. IF DISABILITY OCCURRED DURING ACTIVE OR INACTIVE DUTY FOR TRAINING, GIVE BRANCH OF SERVICE AND DATE OF OCCURRENCE: USNR – 16 JAN 91 – 30 MAY 91

13A. IF YOU ARE NOW A MEMBER OF THE RESERVE FORCES OR NATIONAL GUARD GIVE THE BRANCH OF SERVICE: NAVY

13B. RESERVE STATUS
☒ ACTIVE
☐ INACTIVE
☐ RESERVE OBLIGATION

13C. RESERVE OR NATIONAL GUARD UNIT ADDRESS:
NAV HOSP BETH, NMCRC
2991 NORTH SECOND STREET
HARRISBURG, PA. 17110-1298

14A. ARE YOU NOW RECEIVING OR WILL YOU RECEIVE RETIREMENT OR RETAINER PAY FROM THE ARMED FORCES?
☒ YES ☐ NO (If "Yes," Complete Item 14B, 14C, and 14D)

14B. BRANCH OF SERVICE: NAVY

14C. MONTHLY AMOUNT: $ UNKOWN

14D. RETIRED STATUS: UNKNOWN
☐ PERMANENT
☐ TEMPORARY DISABILITY RETIRED LIST

15A. HAVE YOU EVER APPLIED FOR OR RECEIVED DISABILITY SEVERANCE PAY FROM THE ARMED FORCES?
☐ YES ☒ NO (If "Yes," complete Item 15B)

15B. AMOUNT: $

16A. HAVE YOU RECEIVED LUMP SUM READJUSTMENT OR SEPARATION PAY FROM THE ARMED FORCES?
☐ YES ☒ NO (If "Yes," complete Item 16B)

16B. AMOUNT: $

NATURE AND HISTORY OF DISABILITIES

17. NATURE OF SICKNESS, DISEASE OR INJURIES FOR WHICH THIS CLAIM IS MADE AND DATE EACH BEGAN:
RASHES
MUSCLE PAIN
CHILLS
BRONCHITIS
STOMACH PROBLEMS-GASTRITIS
SINUSITUS
CHRONIC COUGH
FOREIGN BODY IN FOOT
FLU, NIGHT SWEATS
BLOOD PRESSURE PROBLEMS
HEART PALPITATIONS
ABD. PAIN, DIARHEA
ULCER, STOMACH
08 FEB 91

18A. ARE YOU NOW OR HAVE YOU BEEN HOSPITALIZED OR FURNISHED DOMICILIARY CARE WITHIN THE PAST 3 MONTHS? (If "Yes," complete Items 18B and 18C)
☐ YES ☒ NO

18B. DATES OF HOSPITALIZATION OR DOMICILIARY CARE:

18C. NAME AND ADDRESS OF INSTITUTION:

YOU MUST SIGN AND DATE THIS FORM AT THE BOTTOM OF PAGE 10.

VA FORM 21-526
APR 1993

SUPERSEDES VA FORM 21-526, JUN 1992, WHICH WILL NOT BE USED.

PAGE 7

Attachment 1

and Insurance Center

Manheim Street
P.O. Box 8079
Philadelphia PA 19101

Department of
Veterans Affairs

MAY 15 1992

In Reply Refer To:
310/211A/FV
[redacted]

Ms. Julia Y. Dyckman
1505 Pine Hollow Road
Harrisburg, PA 17109

Dear Ms. Dyckman:

We have denied your claim for service connected disability compensation for a stomach ulcer condition.

In reaching this decision we considered the following evidence:

Service medical records; VA examination of January 14, 1992.

Service connection is denied for any stomach condition as there is no evidence of this condition during either period of active duty. The evidence further shows that your stomach complaints preexisted your second period of service and there was no permanent aggravation noted during that period of service.

Please see the enclosed VA Form 1-4107 which explains your procedural and appeal rights.

We have received your letter dated April 6, 1992 in which you stated your disagreement with our decision to deny your claim for disability compensation.

Please note that our prior letter to you dated March 20, 1992 included seven (7) determinations, as follows:

> Grant of service connection for your bilateral foot condition - 0% disabling.
> Grant of service connection for your bilateral varicose veins - 0% disabling.
>
> Denial of service connection for hearing loss; denial of service connection for hypertension; denial of service connection for bronchitis; denial of service connection for rash on the right foot; and denial of service connection for a nervous condition.

2.

[redacted]

We have considered a 10 percent evaluation because you have more than one non-compensable disability. Title 38 CFR 3.324 provides that whenever a veteran is suffering from two or more separate permanent service-connected disabilities of such character as clearly to interfere with normal employability, even though none of the disabilities may be of compensable degree, the VA is authorized to apply a 10 percent evaluation. The evidence does not show employment impairment due to your service connected conditions.

Finally, our determination concerning your stomach condition and your ulcer condition is deferred pending the return of your VA Examination.

Please see the enclosed VA Form 1-4107 which explains your procedural and appeal rights.

Sincerely yours,

F. M. Hoffschneider

F. M. HOFFSCHNEIDER
Adjudication Officer

Enclosure:
VA Form 1-4107

ATTACHMENT 2

WASHINGTON VAMC 01/31/94 09:07 Page: 1

PATIENT NAME	AGE	SEX	RACE	SSN	CLAIM NUMBER
DYCKMAN, JULIA	47	F		[redacted]	28056224

ADM DATE	DISC DATE	TYPE OF RELEASE	INP	ABS	WARD NO
OCT 27, 1993	NOV 5, 1993	NON-SERV (OPT-NSC)	9	0	4ES MED

DICTATION DATE: NOV 3, 1993 TRANSCRIPTION DATE: NOV 8, 1993
TRANSCRIPTIONIST: O'CONNELL, BRIAN

COMPLETED
DATE JAN 26 1994
BY

ADMISSION DIAGNOSES:

1. Irritable bowel syndrome.
2. Persian Gulf war syndrome.

DISCHARGE DIAGNOSES:

Polyp in colon - 211.3
Diverticular disease - 562.10K
569.9 hypertension - 401.1
aching Joint Pain - 719.40
Chronic Fatigue - 780.7
Rash on feet - 782.1
Numbness - 782.0
Abd. Pain - 789.0

Colonoscopy - 11/4, 45.42
Pulmonary Function test 11/3 [illegible]
89.37

1. Irritable bowel syndrome.
2. Persian Gulf war syndrome.

HISTORY OF PRESENT ILLNESS: The patient is a 47-year-old white female with a past medical history significant for hypertension and irritable bowel syndrome, who complains of intermittent diarrhea, arthralgias, chronic fatigue, and symptoms of pain and rash on the feet for approximately two years. The patient reports that her symptoms started during the Persian Gulf war. She had a skin rash which was noted on the bottom of her left foot. The patient also noted that she had some ulcers on the feet which healed later. The patient has had intermittent pain and burning of the feet after healing of the ulcers. The patient states that she was bitten by something during the war and as per inspection from the physicians in the Persian Gulf, it was ascertained that this could be insect versus animal embedded in that foot and the area of skin was removed, however it was not analyzed pathologically. The patient has an irritable bowel syndrome and diarrhea off and on since her Vietnam war days, and the patient states that her stools are soft, watery, but without blood or mucus. The patient also has no history of melena.

PAST MEDICAL HISTORY: The patient also has known hypertension since 1989; she was on Dyazide and Tenormin, however status post rash on her foot during the Persian Gulf war it was assessed that this might be due to the Dyazide, so the patient's Dyazide was discontinued. Also, the patient had hearing loss due to exposure to noise from generators but she recovered from this.

REVIEW OF SYSTEMS: The patient also complains of easily bruising x 2 to 3 months, joint pains since the Persian Gulf war, also reports palpitations since the Persian Gulf war, and secondary to palpitations the patient was placed on Verapamil.

OCCUPATION: The patient worked as a reserve for the military in Vietnam and the Persian Gulf wars.

SOCIAL HISTORY: The patient is a non-smoker and drinks only socially.

ATTACHMENT 3

DEPARTMENT OF THE NAVY
PHYSICAL EVALUATION BOARD
Ballston Tower #2
801 North Randolph Street
Arlington, Virginia, 22203-1989

1850
PEB:10
16 AUG 1996

From: PRESIDENT, PHYSICAL EVALUATION BOARD
To: CAPT JULIA DYCKMAN
NAVAL HOSPITAL
Bethesda MD 20814-0000

Subj: PRELIMINARY FINDINGS ICO CAPT JULIA DYCKMAN
USNR, [redacted]

Ref: (a) SECNAVINST 1850.4C

1. On May 22, 1996 the Record Review Panel of the Physical Evaluation Board evaluated your case in accordance with reference (a) and made the following findings:

a. You are UNFIT FOR DUTY

b. This determination is based on the following diagnoses and International Classification of Diseases (ICD-9-CM) Code(s), Veterans Administration (VA) Code(s), and disability rating(s), where applicable:

DIAGNOSES AND ICD-9-CM CODES	VA CODES	Disability RATING
CATEGORY I: All unfitting conditions:		
1. DIFFUSELY INCREASED SYMPATHETIC NERVE TRAFFIC 337	7099-7008	60
15. COGNITIVE DYSFUNCTION 2949 16. FIBROMYALGIA 7291	9310	30
17. SYMPTOM COMPLEX COMPATIBLE WITH CHRONIC FATIGUE SYNDROME 7807	6399-6354	60
19. POST-TRAUMATIC STRESS DISORDER POST-DATING OPERATION DESERT STORM, 30981 20. CEPHALGIA 7840	9411	10
		90%

Attachment 4

WRITTEN COMMITTEE QUESTIONS AND THEIR RESPONSES

CONGRESSMAN EVANS TO DR. CLAUDIA S. MILLER

Responses to Follow-up Questions Posed to
Dr. Claudia S. Miller,
University of Texas Health Science Center – San Antonio
by the Subcommittee on Benefits Hearing of October 26, 1999
on Persian Gulf War Veterans Issues

1. **Describe the impact of Toxicant-induced Loss of Tolerance (TILT) on claims for disability benefits.**

   Gulf War Veterans with chemical intolerances often suffer from disabling, multisystem symptoms, including headaches, fatigue, dizziness, memory and concentration difficulties, depression, irritability, and a host of gastrointestinal, cardiac and pulmonary problems. But these veterans may show no obvious signs of illness and often have normal laboratory findings during their evaluation for disability. Their symptoms are triggered by everyday, low level exposures which they encounter in their workplaces, while driving, or from some other exposure. These adverse reactions pose a special burden for Gulf War Veterans who want to work, but their jobs involve exposures to fuels, solvents, cleaning agents, fragrances, vehicle exhaust or other chemicals that set off their symptoms. VA doctors who see these veterans in their offices when the veterans are not reacting to an exposure will tend to underestimate the seriousness of their disability.

2. **Is an environmental medical unit (EMU) necessary for diagnosis?**

   It is, in these initial clinical trials. Before these patients can be studied, they need to be removed from the common environmental triggers that are causing their confusion of multisystem symptoms. With veterans in this clean baseline state, researchers can begin challenge testing, using everyday exposures, to confirm the intolerances and learn about the underlying mechanisms driving this disease. In the future, the more seriously ill will still require evaluation in the EMU, but it is reasonable to assume that many can be evaluated as outpatients by VA personnel trained in the use of questionnaires to identify individual intolerances.

3. **What are the consequences to veterans of not diagnosing these intolerances?**

   Patients with chemical, food, and medication intolerances who remain undiagnosed and who never learn to identify and avoid their triggers, do not seem to get better. They may actually get worse with continued exposures. On the other hand, patients who learn to identify their triggers and avoid them do regain tolerance. Many are able to go back to work.

   Patients who go undiagnosed continue to be confused by multiple diagnoses made by various specialists. Further, they are prone to developing multiple adverse drug reactions to antidepressants, anxiolytics, pain medications, anesthetic agents, etc.

4. **What should the VA be teaching its doctors and patients about TILT?**

   To ask the right diagnostic questions and make appropriate referrals. A properly designed questionnaire would go a long way toward educating patients, as well as their physicians, how environmental triggers contribute to multisystem symptoms. Many of the veterans I evaluate in Houston say that this is the first time their symptoms have made any sense to them.

   Several physicians at each VA hospital need to be trained to take detailed exposure histories relevant to TILT. These physicians in turn will be able to teach veterans to keep a personal exposure diary and how to identify and avoid suspected triggers.

5. **Is there a case definition for TILT that could be used?**

   No. The symptomatology is simply too broad; it defies conventional diagnosis. The only way to diagnose this condition is by identifying the intolerances themselves.

The QEESI (Quick Environmental Exposure and Sensitivity Inventory) questionnaire, which I provided to your Subcommittee, was specifically designed to assist doctors in identifying chemically intolerant patients.[*]

6. **Dr. Miller, you served on the VA's Advisory Committee for four years, did you raise these ideas there? What about at the VA referral center in Houston?**

   These ideas are nothing new. They have been raised repeatedly— including several hour-long presentations— with the VA Advisory Committee and with the VA referral center in Houston. Both groups are in possession of all my papers and testimonies on TILT. At the request of the VA referral center, I have evaluated approximately 80 Gulf War Veterans. My evaluations of these veterans, along with a discussion of their chemical intolerances, was sent to Houston staff and to the original referring VA physicians. Several years ago, at the request of the VA, I delivered a presentation on chemical intolerance for a national teleconference on the Gulf War veterans' illnesses. To my knowledge, there has been no follow-up on this teleconference presentation or any of the aforementioned talks.

7. **Are you aware of any organizations or governmental agencies which support the concept of an environmental control unit? If so, please provide information concerning them.**

   There has been much enthusiastic support from governmental agencies. The National Institute of Environmental Health Sciences (NIEHS) singled out the environmental medical unit as the "most important way to develop a reliable clinical approach for the diagnosis and evaluation of chemical sensitivities." This same enthusiastic support has been voiced by physicians and researchers attending other national meetings sponsored by the National Research Council (National Academy of Sciences), the Agency for Toxic Substances and Disease Registry, and the Environmental Protection Agency. Physicians and scientists attending the National Research Council/NAS meeting and the 1999 CDC workshop on the Gulf War veterans' illnesses placed EMU studies at the top of their research priorities list.

   Federal officials, including Army Surgeon General Ronald Blanck, have called for an environmental medical unit to evaluate Gulf War veterans.[**] On November 10, 1993, Congress ordered funding of an environmental medical unit following testimony I presented before the Oversight and Investigations Subcommittee of the House Veterans' Affairs Committee. However, funding for the unit was diverted elsewhere, and no unit was built.[**]

References:

Miller CS, Prihoda TJ: The Environmental Exposure and Sensitivity Inventory (EESI): a standardized approach for measuring chemical intolerances for research and clinical applications. *Toxicology and Industrial Health 15:370-385, 1999a.*

Miller CS, Prihoda TJ: A controlled comparison of symptoms and chemical intolerances reported by Gulf War veterans, implant recipients and persons with multiple chemical sensitivity. *Toxicology and Industrial Health* 15:386-397, 199b.

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[*] The validity, reliability, sensitivity, specificity of this instrument have been published (Miller and Prihoda, 1999a,b).

[**] See enclosures

The American Legion
For God and Country

★ WASHINGTON OFFICE ★ 1608 "K" STREET, N.W. ★ WASHINGTON, D.C. 20006-2847 ★
(202) 861-2700 ★

November 24, 1999

Honorable Bob Filner, Ranking Member
Subcommittee on Benefits
Committee on Veterans' Affairs
U.S. House of Representatives
335 Cannon House Office Building
Washington, D.C. 20515

Dear Representative Filner:

I have been asked to respond on behalf of Matthew Puglisi, Assistant Director for Veterans Affairs and Rehabilitation Division, to your question regarding the Morton decisions impact on Gulf War veterans' claims.

Question: "How do you view the Morton decision holding that VA is prohibited from assisting veterans in developing their claims until all of the evidence to establish a well-grounded claim has been submitted as affecting the claims of Gulf War veterans with undiagnosed illnesses?"

Response: The American Legion feels the Department of Veterans Affairs (VA) reaction to the Morton vs. West decision is detrimental to all veterans and/or their family members who file claims for VA benefits. Gulf War veterans' claims for undiagnosed illnesses are often complicated and require extensive development and research. Many veterans do not possess the resources (financial and technological) to provide evidence to fully substantiate particular claims. To date, many Gulf War veterans' claims that are being adjudicated result in a relatively low allowance rate. The failure of VA to assist these veterans during the developmental process will obviously, in our judgement, have a negative impact on Gulf War veterans, as well as other veterans. Although this decision does not specifically address Gulf War claims, we believe that it will adversely affect claims submitted by any veterans.

Sincerely,

Lisa L. Spahr, Research Analyst
Veterans Affairs and Rehabilitation Division

CC: Matthew Puglisi

Congressman Filner to Disabled American Veterans

Follow-up Question from the House Veterans' Affairs Subcommittee on Benefits Hearing of October 26, 1999, on Persian Gulf War Veterans Issues
Submitted by
Joy. J. Ilem
Associate National Legislative Director
Disabled American Veterans

Question: How do you view the *Morton* decision holding that VA is prohibited from assisting veterans in developing their claims until all of the evidence to establish a well-grounded claim has been submitted as affecting the claims of Gulf War veterans with undiagnosed illnesses?

The Disabled American Veterans (DAV) believes the *Morton* decision has the potential to negatively impact all veterans' claims for disability compensation, including Persian Gulf War (PGW) veterans' claims for undiagnosed illnesses. Although we do not yet know what the full impact of the *Morton* decision will be on PGW veterans' claims for undiagnosed illnesses, it is reasonable to expect that some PGW veterans will experience great difficulty in obtaining the appropriate evidence to make their claims well grounded without VA's assistance.

A person who submits a claim for VA benefits has the burden of submitting evidence sufficient to justify a belief by a fair and impartial individual that the claim is well grounded. 38 U.S.C.A. § 5107(a). In order for a claim to be well grounded, there must be competent evidence of current disability (a medical diagnosis), of incurrence or aggravation of a disease or injury in service (lay or medical evidence), and of a nexus between the in-service injury or the disease and the current disability (medical evidence). *Caluza v. Brown,* 7 Vet.App. 498 (1995).

The court's definition of a well-grounded claim in *Caluza* and subsequent case law leading up to and including *Morton* specifically places PGW veterans at a disadvantage because of the unique nature of claims for undiagnosed illness. The standard three elements for making a claim well grounded expressed in *Caluza* are not applicable in claims for undiagnosed illness. First and foremost, PGW veterans' claims for undiagnosed illnesses under 38 C.F.R. § 3.317 hinge on a lack of a diagnosis. The provision clearly indicates that medical history, results from physical examination, or laboratory testing cannot be attributed to any known clinical diagnosis. Secondly, the undiagnosed illness provision does not specifically require evidence of disease during active service but rather objective indication of chronic illness characterized by certain symptoms that become manifest during service *or* to a degree of 10 percent or more not later than December 31, 2001. Finally, there is no known causal link or nexus between service in the Persian Gulf and symptoms associated with Gulf War Syndrome, but rather undiagnosed illnesses are circumstantially linked to service in the Persian Gulf.

Another significant disadvantage is that many PGW veterans are seriously disabled by mental and physical illnesses associated with Gulf War Syndrome. They are often plagued by debilitating chronic symptoms such as fatigue, joint pain, and memory loss, which make it impossible for them to think and function normally. As a result of the court's ruling on *Morton*, PGW veterans may be denied benefits they are entitled to because they are physically or mentally incapable of securing, on their own, the appropriate evidence to establish a well-grounded claim.

In the past, many PGW veterans have experienced significant difficulty in processing their claims for undiagnosed illness through the VA system. However, VA has given little consideration to the unique complexity of PGW veterans' claims for undiagnosed illness or the effect of the Morton decision on these cases. The VA in a September 9, 1999 letter to all VA Regional Office and Center Directors indicated that currently, there are no exceptions to the well-grounded claim requirement for any claimant and that any exceptions to the requirement will have to come about through legislation and/or regulation.

Because of the unique aspects involved in disability claims under the undiagnosed illness provision, we believe that PGW veterans in particular will be more harshly affected and particularly disadvantaged by the court-imposed mandate resulting from the *Morton* decision holding that VA is prohibited from assisting veterans in developing their claims until all of the evidence to establish a well-grounded claim has been submitted. Therefore, we believe immediate action should be taken by Congress to enact legislation to clarify the meaning of the well-grounded claim provision and return it to its prior status.

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November 4, 1999

Hon. Bob Filner, Ranking Member
House Committee on Veterans' Affairs
Subcommittee on Benefits
333 Cannon House Office Building
Washington, DC 30515

Attn: Ms. Beth Kilker

Dear Representative Filner:

The National Gulf War Resource Center thanks you and Chairman Jack Quinn for the opportunity to testify on October 26 regarding compensation benefits available to Gulf War veterans under Public Law 103-446.

This letter responds to the request from Rep. Bob Filner for clarification of the position of the NGWRC regarding *Morton v. West* (1999), where the United States Court of Appeals for Veterans Claims held that unless a claim meets the standard of "well grounded," the Department of Veterans Affairs is prohibited from assisting the veteran with the claim.

In our testimony on October 26, 1999, the NGWRC stated: "The NGWRC believes *Morton v. West* (1999) does not apply to undiagnosed illnesses claims because such claims do not require a diagnosis, and because the law clearly states that a veteran's claim of symptoms represents a well-grounded claim. The NGWRC believes the VA, in order to avoid a completely adversarial system, must have a strong duty to assist veterans with filing claims."

Under Section 103 of PL 103-446, Congress declared the purpose of the new law as, "(1) to provide compensation to Persian Gulf War veterans who suffer disabilities resulting from illnesses that *cannot now be diagnosed or defined, and for which other causes cannot be identified*" [emphasis added]. Clearly, Congress intended to have the VA assist Gulf War veterans, many with new and unique toxic exposures and presenting with undiagnosed conditions, with the broadest assistance possible.

In a letter dated May 3, 1999, Leigh Bradley, General Counsel for the VA, wrote to the Chairman of the Board of Veterans' Appeals that, "The statutory standard stated in section 5107(a) is sufficiently broad that there may be a range of permissible conclusions concerning the amount of evidence necessary to satisfy that standard [of a well grounded claim]." She added, "... lay evidence may be sufficient to establish the existence of any disability which is ordinarily capable of identification by lay observation." In addition, she added, "Further, the credibility of testimony must be presumed for purposes of determining whether a claim is well grounded." This includes "time lost from work, evidence that a veteran has sought medical treatment for his or her symptoms, evidence affirming changes in the veteran's appearance, physical abilities, and mental and emotional attitude, etc."

Therefore, if a veteran *presenting* signs and symptoms is enough to *grant* service connection under the law, logic follows that a veteran presenting signs and symptoms presumed to be credible amounts to *ample evidence* for a claim to be considered a well-grounded claim for undiagnosed or not "clearly defined" illnesses.

Thus, the threshold defining a well-grounded claim for undiagnosed or not "clearly defined" illnesses, by Congressional intent and public law, rests outside the standard VA requirement that a diagnosed condition be present at the time a claim is filed.

If *Morton v. West* was to be applied to Gulf War undiagnosed and not "clearly defined" benefits, there may be serious, adverse consequences for veterans. First and foremost, the veteran will lose the assistance of the VA he or she needs in order to obtain many critical documents, such as military medical records, military service records, and VA medical treatment records.

In all, more than 11,000 Gulf War veterans have filed claims for undiagnosed and not "clearly defined" illnesses, and many of these claims are currently under adjudication or appeal. Gulf War undiagnosed illnesses claims may be sent into indefinite limbo unless the impact of *Morton v. West* on Gulf War claims is clarified. These are dire consequences not intended by Congress.

The NGWRC believes the VA has a strong, overwhelming requirement to assist veterans with preparing their claims, lest the system become completely adversarial. This applies most urgently to those Gulf War veterans with new and unique toxic exposures resulting in undiagnosed and not clearly defined illnesses.

If one culprit could be singled out on this issue of poor claim development, it would be the Department of Defense. The Pentagon failed to tell troops about various toxic exposures, failed to keep records, and then failed to conduct required research to determine of war-related toxins are associated with current adverse health outcomes in tens of thousands of Gulf War veterans.

The best example of this is depleted uranium, a radioactive toxic waste used as ammunition during the Gulf War. As many as 436,000 U.S. troops entered into areas contaminated by as

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much as 315 tons of DU waste. The DoD failed to inform or train the soldiers that DU was in use. The DoD broke the law (AR 40-14 and AR 40-5, among others) and failed to keep track of known or suspected radioactive exposures. Finally, the DoD broke the law by failing to conduct research on inhaled and ingested DU exposures, a violation of PL 103-160.

In a tragic new development, the DoD has know for some time that the DU used in the Gulf War may have been contaminated with one of the most deadly substances known to humans: plutonium. This is according to documents obtained by the NGWRC from the Department of Energy using the Freedom of Information Act.

The NGWRC believes that with so many toxic exposures, and with such serious failures at the Pentagon, that the VA must be provided with the most liberal duty to assist veterans. Thus, *Morton v. West* must be overturned. Anything less may leave veterans to twist in the dust of chemical warfare agents as well as the debris of a new age of warfare using weapons fashioned from radioactive toxic waste.

Toward that end, the NGWRC strongly endorses the intent and language of H.R. 3193, the "Duty to Assist Veterans Act of 1999," introduced by Representative Lane Evans on November 1, 1999.

We hope this answers your question. We will be happy to provide you with any additional material you may need on this subject.

Sincerely,

PAUL SULLIVAN
Executive Director